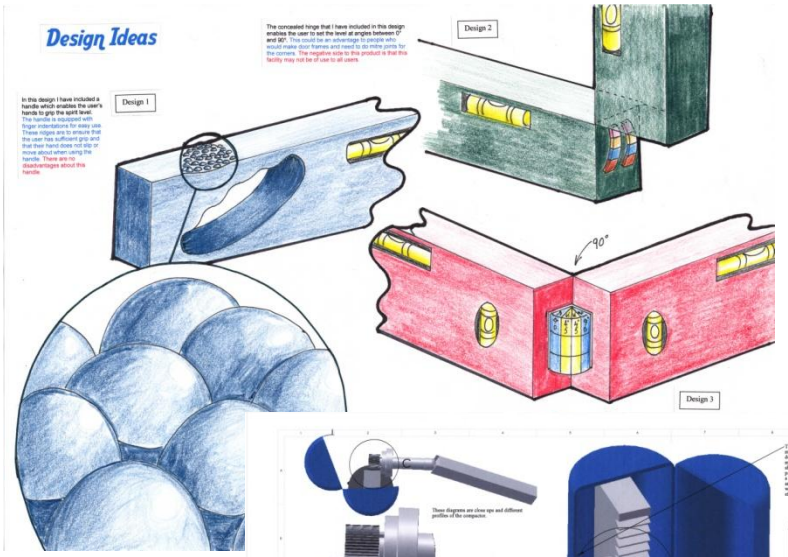
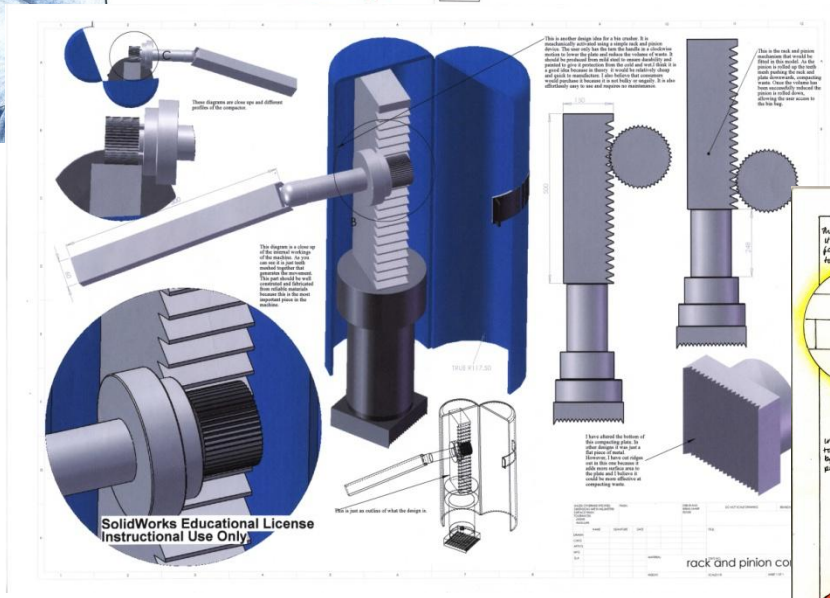
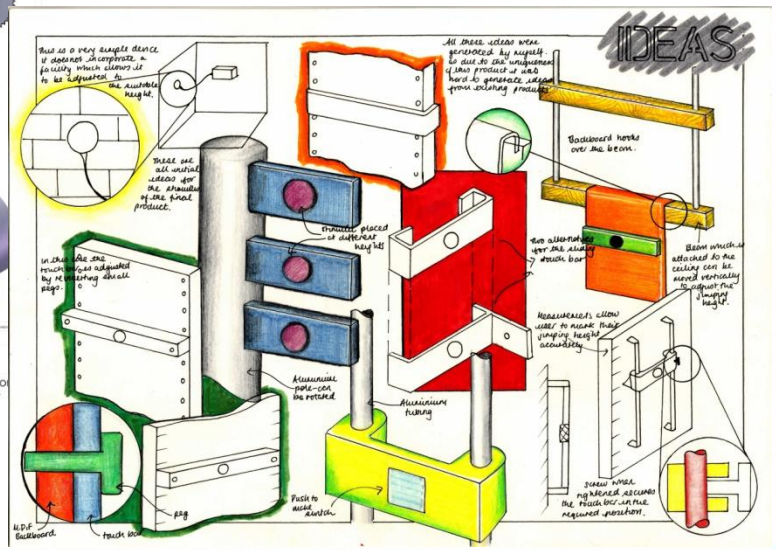






AS Technology Agreement Trial

24th Oct 2012

AS Technology Unit 2

Rewarding Learning

About Today

- Standards
- Marking
- Moderation Procedures
- Discussion
- Support

- CCEA Principal officer Judith Ryan
- AS/A2 Principal Moderator Hugh Austin
- AS APMs Michael Titterington,Gerard Tumelty, John Titterington
- A2 APMs Mark Irwin,Mary O’Brien.

Moderation

- Visiting Moderation
- 2 Teams 2012/13
- APM – AS/A2 (5)
- PMs + 5 APMs
- 2 Post moderation meeting PM- APMs
- All centres visited.
- Moderation AS Wed 15th May to Wed 22th May
- A2 Thurs 23rd May to Fri 31st May.

Comments! General issues

It is the responsibility of the teacher to ensure the choice of the product allows sufficient scope for development and challenge at AS Level .

Teachers need to focus on the following:

- Unit 2 follows the specification (product development).
- The choice of product gives scope for development and is not a design and make activity.
- The emphasis in this unit is on the analysis and development of an existing product, with the view to re-designing either the product or an aspect of it.
- Investigation & Analysis should conclude with student identifying which product the candidate wants to develop.
- Section Two is worth 30%. Centres need to concentrate on teaching hand graphics and CAD.
- Use an appropriate range of materials in the manufacture of the product.
- Ten A3 pages in portfolio?
- Unit 2 is worth 100 marks.
- In manufacturing section a high quality outcome is a manufactured product which incorporates re-development.
- Teachers to indicate on Candidate Record Sheet where/why innovative work is being rewarded with a high level mark.
- Candidate records must be signed my student and teacher.
- It is compulsory requirement for centres to provide sample work to CCEA. This will be collected during moderation.

AS Technology Unit 2

- Internal standardisation
- Graphics & ICT
- BSI standards.

AS Technology unit 2

Development of an existing product with the view to re-designing either the product or an aspect of it.

Club head design from 1600 to 1920


PORSCHE 911
GENERATIONS


HP
Sauce
BIGGEST
clipbank

Innovation

- Aesthetics/ Ergonomics
- Additional functions
- Materials
- Performance
- Manufacturing process/ techniques
- Storage

Students will produce a 3 dimensional model or prototype which represents the practical outcome of the product analysis and development.
Realise a 3-dimensional outcome in a range of materials. (appropriate material)
Demonstrate a range of production skills and processes

Our engineers are designers and all our designers are engineers.
James Dyson

Sometimes when you innovate, you make mistakes.
It is best to admit them quickly, and get on with improving your other innovations.
Steve Jobs

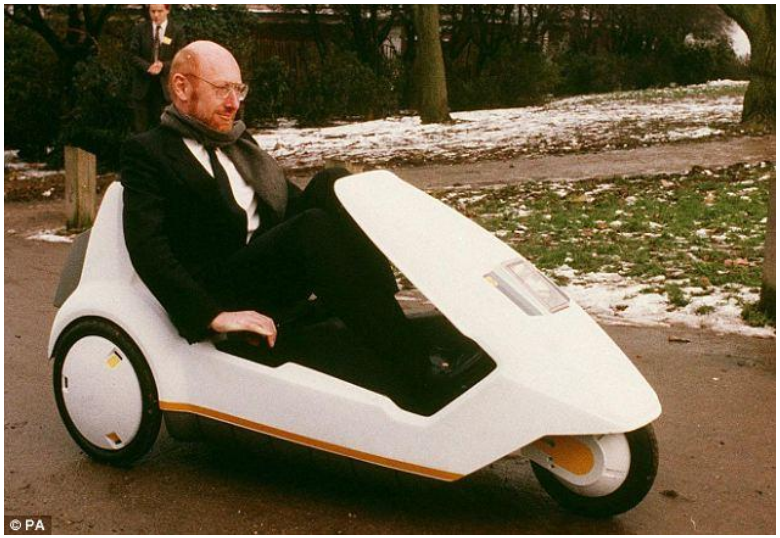

PREDATOR I.


adidas

Good design is good business.

Thomas Watson, Jr.

Although the term is broadly used, innovation generally refers to the creation of better or more effective products, processes, technologies, or ideas that are accepted by markets,governments, and society. Innovation differs from invention or renovation in that innovation generally signifies a substantial positive change compared to incremental changes.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CHOPPER

Marking Criteria AS Unit 2: Development

	Marking Criteria		Level	Mark
1	Investigation and analysis of product	20	High	14-20
			Medium	7-13
			Low	1-6
			Zero	0
2	Re-design solutions and development	30	High	21-30
			Medium	11-20
			Low	1-10
			Zero	0
3	Manufacture	40	High	29-40
			Medium	13-28
			Low	1-12
			Zero	0
4	Testing and Evaluation	10	High	7-10
			Medium	4-6
			Low	1-3
			Zero	0
			Total	100

Communication: All information presented for assessment should be presented in a coherent and concise manner using a range of ICT, illustrations, extensive photographs, annotated sketches, text and other appropriate means of communication.

AS unit 2 Technology

Marking Criteria

- 1 Investigation and analysis of product (20 marks) 2/3 pages
- 2 Re-design solutions and development (30 marks) 4/5 pages
- 3 Manufacture (40 marks) 1 page
- 4 Testing and Evaluation (10 marks) 1/2 pages

Investigation and analysis of product

- High(14-20)
- Present a wide range of existing similar products in detail.
- Give a detailed description of function, purpose and features
- Consider in detail relevant materials and industrial production methods.
- Present a detailed evaluation of the fitness for purpose.
- Present high level analysis of ergonomics and aesthetic suitability.

Investigation and analysis of product

- Medium (level 7-13marks)
- Present a suitable range of existing similar products in moderate detail.
- Give some description of function, purpose and features.
- Consider aspects relevant to materials and industrial production methods.
- Present a vague evaluation of fitness for purpose.
- Present limited analysis of ergonomics and aesthetic suitability.

Investigation and analysis of product

- Low (level 1-6 marks)
- Present only a basic range or list of existing similar products.
- Give limited description of function, purpose and features.
- Consider a limited range of materials and industrial production methods.
- Present a vague evaluation of fitness for purpose.
- Present limited analysis of ergonomics and aesthetic suitability.

Zero should be awarded for a response which is not worthy of any credit.

Glue Gun

1. Investigation and Analysis Of Product	2. Re- design Solutions and Development	3. Manufacture	4. Testing and Evaluation

Function
The product provides construction standard fixation to all surfaces including possibly sensitive ones, the fully adjustable gun can apply adhesive spray to a large area. The device uses a pneumatic hotmelt system and uses mains electricity to function. Settings can be changed allowing the glue to be applied in a precise fassion.

Features-
1. Built in speed loader
2. Heater control
3. Handle also serves as stand
4. Rear mounted spray pattern control knob.
5. Adjustable and changeable spray knob.
6. 110 volt heater for fast application.

Fitness For Purpose-
The speed loader eliminates reload time for continuous operation. The product is fully adjustable and perfectly balanced for precise application. It a detachable stand and is fairly lightweight (1.5Kg). The highly efficient heater produces a melt rate of 5.25Kg/ hr.

Material Usage-
High grade Polypropylene is the primary material in this product due to its ease of manufacture, heat resistance and strength. Due to its dense nature the casing can be made thinner reducing cost.

Industrial Processes-
The products main body and major components were manufactured using a Compression moulding method on a large scale, this ensured a high quality finish and allowed concept models to be manufactured quickly and cheaply.

Ergonomics-
The product is as light as possible and is perfectly balanced. The stand allows the user to grab the device with ease and it fits comfortably into the users hand. Operation is simple and adjustments can be made however the power cable restricts movement.

Aesthetics-
The product is designed to be lightweight, portable and efficient but sacrifices aesthetics for efficiency. The stand and speed loader distort the otherwise smooth curvature of the design. The housing is bulky and the colour scheme is simple but is not distinctive; this disadvantages it in the market. However, the gloss finish is of a professional standard, and the gun fits in well within a working environment.

Function-
The product is designed specifically for hobby and craft use; with this in mind its key aspects are value for money, reliability and ease of use. The gun uses readily available standard issue glue sticks, and operation is simple and safe. The heat chamber is very efficient for a gun of this type producing a melt rate of 400g/ hr.

Features-
1. Rear glue loading mechanism.
2. Trigger positioned to minimised effort required to operate.
3.Handle serves as stand.
4.Slim design allows good visibility and precise application.
5.Highly Efficient heater for gun of this type.

Fitness For Purpose-
The product is lightweight (1.15kg) however the front heavy balance affects otherwise precise application. Its slim design gives excellent visibility and takes only ten minutes to reach operating temperature.

Material Usage-
The casing is made from a low grade Melamine formaldehyde (MF), It is relatively strong and lightweight, however, it is vulnerable to impacts. It was mainly chosen for its ease of manufacture. The trigger and stand were made from a higher grade of MF to improve strength and resistance to impacts.

Industrial Processes-
The product was manufactured with price being of key importance; therefore all components were made using an injection moulding process. This allowed for cheap mass scale production despite high set up costs.

Ergonomics-
The product is very easy to operate and is lightweight however the cable restricts movement and the product doesn't fit comfortably into the users hand. The handle doubles as a stand however this also disrupts balance. The trigger is arched to fit the users fingers.

Aesthetics-
The slim simplistic design lacks curvature but all lines are parallel and give the gun a professional appearance; the vents are also parallel with the handle. The yellow colour is inviting and catches the eye. However the design lacks detail and could be called over simplistic. It is manufactured on a large scale and the quality of matt finishing has suffered as a result.

Function-
The product is a heavy duty glue gun ideal as a production tool and for product assembly. The product is designed to outperform all other glue guns on this type. The product runs on mains electricity and uses 2 150 watt stainless steel cartridge heaters. The product is robust but weighs a mere 1.15kg. Outlet speed can be changed depending on the amount required.

Features-
1. Glue cartridges are rear loaded slowing production.
2. Requires mains electricity which makes application.
3.Handle also serves as stand.
4.Precise applicator allows for accuracy in use and clean cut off.
5.Efficient heater produces a high melt rate.

Fitness For Purpose-
The heaters are thermostatically controlled guaranteeing ease of use and produces a melt rate of up to 3.5kg/ hr. The handle also serves as a stand but the cable restricts movement. The product has a precise applicator which ensures accuracy.

Material Usage-
The casing is made using a less dense polyamide (nylon). This is a strong shock resistant material that is also resistant to signs of fatigue. However, this is also a more expensive material and requires special machinery for moulding purposes. **The trigger is made from a high grade, denser acrylic.**

Industrial Processes-
The main body was manufactured using a specialised extrusion moulding. The trigger was manufactured in bulk using injection moulding method.

Ergonomics-
The product is easy to use but its bulky design obscures vision and its cable restricts movement. The stand is angled to make engaging with the product simple however the handle doesn't fit comfortably into the users hand.

Aesthetics-
The product is not aesthetically pleasing due to its cumbersome and bulky design; aesthetics have been sacrificed for the sake of function and practicality. It is built to balance perfectly but this too affects aesthetics negatively distorting the design. The housing is simplistic in shape and lacks colour or curvature. The matt finishing is of a high qualitv.

Investigation

Introduction: My n[redacted]is is my AS Technology coursework which is worth 50% of my AS level. I have decided to base my coursework around 'garden sprinklers'.

The Travelling Sprinkler – Nelson 1865 Rain Train
Price - £59.99

Function: The sprinkler has hole drilled along the top of each arm which act as the nozzles. This sprinklers arms and wheels work independently of each other as the arms can spin without the wheels spining. The 'travelling sprinkler' travels at a speed of 20m per hour but needs at least 40psi at the mains tap to operate as it is powered by water so it can be used by anyone. The sprinkler irrigates gardens from 5m² to 15m²so is also suitable for any garden type.

Design Features: This 'travelling sprinkler' is an automatic garden irrigator as it moves along itself with the power of water pressure which makes for easy garden watering. The sprinkler also has spiked wheels as this spikes the garden to aid water absorption. The sprinkler arms are adjustable creating varying water spraying types. The main design feature of the sprinkler is the ability to move along the garden and water the grass without have to reposition it.

Materials and Manufacturing: This 'travelling sprinkler' is made from cast metal which is very strong and durable, but is very heavy for the average sprinkler, although this is necessary for the spikes to enter the ground. The sprinkler arms are made from aluminium which is light and strong they were formed through the process of bending and the sprinkler eyes made by drilling holes into the sprinkler arms. The spiked wheels are made from ABS plastic which is also strong and durable which it needs to be. The pivot used on the front wheel is too made from aluminium and has been bent into shape and finally the small plastic bearing was injection moulded. This sprinkler has made use of standard components such as screws and bolts which attach the wheel to the pivot. The body of the sprinkler has been made through die casting due to its shape and size.

Aesthetics / Ergonomics: The Nelson 1865 Rain Train weighs 20lbs which is considerably heavy for a sprinkler but is necessary for the spikes to enter through the ground. The sprinkler is coloured a bright yellow which looks appealing with the plain white wheels. The sprinklers body has grooves to act as a grip when carrying it around. The Nelson 1865 Rain Train is easy to set up as the hose is used a runner and is feed through the front wheel to direct the sprinkler in the right direction. The sprinkler arms can easily be adjusted with a simply twist or turn. The Nelson company logo is also found on the top side of the body which looks well.

Oscillating Sprinkler – Ray Padula RP-RDOS-3
Price - £21

Function: This 'oscillating sprinkler' covers an area of 4000 square feet which would cover any large garden. It sprays water in an 'oscillating' fashion which gives an even spread. The spray arm can be locked in one position and the spray is adjustable in span and height. The sprinkler lies flat on any garden surface so it is easy to set up. The sprinkler also has 20 nozzles creating a larger water span.

Design Features: The 'oscillating sprinkler' has a throttling cam powered by the water used for irrigation. It creates a unique wave dance and one of the most accurate irrigating systems on the market. The sprinkler also has a quick reverse design allowing for shortest possible delay time between turns. The sprinkler has a broad base for a more balanced spray.

Materials and Manufacturing: The Ray Padula RP-RDOS-3 is made from the durable plastic ABS as it is very durable and strong which it needs to be as it has a life time guarantee. The sprinkler has been made through the process of injection moulding and makes use of standard components such as water fittings, water seals and bearings in the rotary arm.

Aesthetics / Ergonomics: The Ray Padula RP-RDOS-3s dimensions are 21x11x9 which is an average size for an 'oscillating sprinkler' the sprinkler is mainly a navy colour and small parts coloured green, although the product can come in a range of colours. The settings on the sprinkler are very easy to use as they are stationed on top of the sprinkler. This sprinkler also has a nozzle clean out plug making it easier to maintain. It also has an EZgrip hose coupling making it very simple to connect and disconnect the hose from the sprinkler. The Ray Padula logo is also found on the body of the sprinkler which looks good.

Pulsating Sprinkler – Aqualine 175 – 964
Price - £16.95

Function: This 'pulsating sprinkler' also known as the impact sprinkler can cover an area up to 530m². It has a 3/16TH nozzle and sprays water in a pulse fashion in cross section. The sprinkle also comes with a spike so is rigid in use. This sprinkler also can have the water distance adjusted to suit any garden size.

Design Features: This 'pulsating sprinkler' has a detector flap to adjust water stream lengths, as well as this the arm controls the stream preventing side splash. This sprinkler also has chemical resistant bearing seals which aids the life time of sprinkler. The Aqualine 175-964 has also got a brass full circle impact meaning it can spray water 360º.

Materials and Manufacturing: The Aqualine 175 – 964 is made from brass, bronze and stainless steel which is a lot better than some zinc sprinklers as they last longer. The hose fitting is made from the plastic ABS and has been injection moulded while the main body has been sand casted. The attachable spike has been made from mild steel and has then been galvanised. The sprinkler also has made use of standard components such as the stainless steel spring and threaded screws.

Aesthetics / Ergonomics: The Aqualine 175 – 964 has a large spike for sticking into the ground as 'pulsating sprinklers' are designed to be close to the ground as the water jet faces up at a 45º angle. This sprinkler has a small body and dull colours as it isn't supposed to be seen in the garden. The spike which comes with this sprinkler is easy to attach and also easy to insert into the ground.

Rotary Sprinkler – Hozelock Vortex
Price - £14.99

Function: This 'rotary sprinkler' has four spraying arms which spin giving a larger spraying area of 254m², and can work with water pressures ranging from 14.5psi to 145psi. This type of 'rotary sprinkler' is suitable for any garden type although larger versions of these are found on football fields.

Design Features: The Hozelock Vortex has two different types of water jets, misty for seedlings and small plants and jets for turf. The sprinkler has an easy-grip adjustment to change from each water spraying type. This sprinkler also has a mounted sled for it to suit all surface types and for it not to damage the ground such as leaving imprints of where it had been sitting. The key design feature is the look of the sprinkler, it looks new and different and unlike any other sprinkler.

Materials and Manufacturing: The Hozelock Vortex's body is made totally from ABS as it is strong and durable and can be injection moulded. This sprinkler has standard components for example the pivot which spins the arms and the rubber washers in the water fittings.

Aesthetics / Ergonomics: The Hozelock Vortex is coloured a bright yellow, red and grey which all complement each other and can easily be seen in the garden. It also has two handles for carrying and storage, and an easy to access adapter for the hose. This sprinkler is very light weight and easy to use. It has a very modern style and looks very well.

Stationary Sprinkler – Noodlehead N111C
Price - £16

Function: The Noodlehead N111C has 12 water jets which will spray water effectively 20x20, a 40' strip, which means you would have to move the sprinkler about quite a bit. This sprinkler can also attach to an overhang or eave for easier irrigation. The sprinklers dimensions are 5.50x7.00x2.50 which isn't very big and it weighs a light 0.38lbs. This sprinkler also sprays 3.6 gallons per minute.

Design Features: This 'stationary sprinklers' main design feature is 12 bendy water jets which will hold any shape you put them in, meaning if some parts of the garden are brown you can easily point the jets at it to give it more water. This sprinkler can also come with a tripod or an 'Extend-A-Riser' which has three different heights of 8'', 16'' and 24''.

Materials and Manufacturing: The body of this sprinkler is made from ABS plastic and has been injection moulded. The water jets or 'noodles' are made from polychloroprene which is a flexible rubber resistant to oil and tearing. The tips of the 'noodles' are also made from the plastic ABS. The Noodlehead N111C makes use of standard components such as the jubilee clip connector.

Aesthetics / Ergonomic: The Noodlehead N111C has an easy to adjust watering system, by simply bending the water jets into place. The water jets or 'noodles' are a new design in sprinklers and is something totally different to what is originally on the market yet are so simple and easy to use. The body of the sprinkler is coloured green while the water jets are coloured black with grey tips. This sprinkler is very light due to the light weight materials used.

Investigation

My name is I and this is my AS Technology coursework. It is worth 50% of my AS and I am going to investigate a camping stove. I chose to investigate a camping stove because I like to go camping and love the outdoors a lot. Here are 6 similar camping stoves which you can buy today.

MSR Dragonfly Stove

Function

This camping stove offers a first class range of flame control from simmer to boil with a twist of the flame adjuster. Another function is that it can work on a wide range of fuels such as; white gas, kerosene, unleaded auto fuel, diesel and jet fuel.

Design Features

The most noticeable feature of this stove is the extra wide pot supports. These three wide pot supports means that it can hold larger pots and pans for cooking. Another beneficial is that it can fold away to a third of its standing size. This allows for compactness and easy storage. The burner is also suspended from the ground meaning that it does not lose heat.

Materials and Manufacturing Processes

This camping stove is made from mostly aluminum, mild steel and cast iron. The round base of this stove is made from aluminum which provides strength needed while being light to carry. The pot supports are made from mild steel and bent to give the stove stability on the ground and stability from pots. Finally the burner is made from cast iron.

Aesthetics and Ergonomics

This stove is easily stored away with its folding ability meaning that it is not bulky but still provides large pot supporters. It also has very good balance due to the 3 large legs. The pots supporters are out of proportion to the burner itself. There is also not much colour in this stove. The dimensions of this stove are 200 x 200 x 150 mm and has a retail price of £104.99.

Optimus Stella

Function

This camping stove operates with Butane and Propane with an output of 3000w and has an easy and precise burner control for accurate cooking and safe adjustments from simmer to boil. This stove can hold pots and pans up to 280mm diameter.

Design Features

One major design feature of this camping stove is that it has a folding mechanism that makes this stove fold away to a third off its standing size. This is very useful as it can be put away for easy storage. Another feature is that the on the top of the burner head, it has a ball and socket which means that it can swivel when not in use and can be stored away. It also has 3 legs with a slope on them which gives this stove a stability feature.

Materials and Manufacturing Processes

This camping stove is made from blackened steel. This material has excellent corrosive protection for outdoor use. The top of the burner head is made from stainless steel mesh. The three legs are also made from blackened steel providing protection and also providing useful strength needed to support cooking on. They also have some very deep notches on top of them to keep pots from sliding too much.

Aesthetics and Ergonomics

This stove has a very modern and stylish look with the three legs that are 'X' stamped and pressed into shape. It also fits in well with outdoor and camping use with the folding legs and burner which makes it compact. The stove is in proportion with the pot supports and burner being proportional. It also has very good balance with 3 stable legs which lock in position. The measurement of the stove when it is folded is 105 x 105 x 35mm and has a retail price of £64.99.

Highlander Camp Stove

Function

This camping stove's main function is that it has an adjustable gas flow. This means the gas can be controlled which means that the flame and heat can also be controlled for simmering to boiling. This stove sits on top of a gas cylinder unlike the other stoves I have looked at. It also has a drip pan will collects water or food which may spill.

Design Features

Its first main feature is that it has four pot supports for additional strength needed to hold heavy pots and pans. On the top of the pot supports there are notches so the pots and pans can't slide off easily. The notches are made by machine drilling.

Materials and Manufacturing Processes

This camping stove is made from stainless steel. The pot supports are made from stainless steel as it has excellent corrosive resistance for outdoor use. The burner itself is also made from stainless steel which provides very good durability properties which makes it resistant from scratches and dents. The large turning knob is made by injection moulding with ABS. It also contains standard components such as centre pins to hold it together. The brass fitting is needed to connect the stove to the gas cylinder.

Aesthetics and Ergonomics

The steel material used for the pot supports provides an excellent, high class look and also has excellent protection properties for its outdoor environment against the elements. There is also a grip on the flame adjuster which will enhance aesthetics. The dimensions of this stove are 200 x 12 mm, weighs 470g and has a retail price of £22.99.

Large Square Gas Boiling Ring

Function

This camping stove is made to operate at low pressure with Butane or Propane. It also has a variable flame control with a maximum 8.8 kW output.

Design Features

This camping stove has four legs for stability and is designed like a small table. This means that it is more stable for heavy weights. This means that it can be used upon any surface needed and provides beneficial strength to hold pots and pans. It also has a screw in valve for easy gas exchange.

Materials and Manufacturing Processes

This camping stove is made from a large sheet of steel and held together by standard components. The advantage of steel is that is very strong meaning it can hold heavy pots and pans. The burner located in the middle of this stove is made from cast iron. This material is used because it has excellent heat retention and diffusion properties. Standard components are also used to hold the stove together and the advantages of this is that it is cheap.

Aesthetics and Ergonomics

This camping stoves looks very modern and stylish which the polished black colour. It has very good balance due to the 4 large legs. The proportion is also very good as everything seems to be the right size. One problem may be that this stove doesn't have any grip. The dimension of this stove is 400 x 400 x 180mm, weighs around 700g and its retail price is £25.92.

Vango Compact Gas Stove

Function

This stove has many functions. It can burn many different fuels such as butane, propane, petrol and diesel. It also has an accurate burner which means that the stove can go from simmering to boiling with a quick, easy and safe adjustment, with just a turn of the knob.

Design Features

One of the main features on this stove is that it has bafflers on the burner to reduce the effect of the wind on the flame and can also be used as a resting point for pots. Another feature is about the three arms that I talked about above. These can be folded to support different sizes of pans, big or small, and can be folded for easy storage. It is also small and light which means that it is easily carried around for the user.

Materials and Manufacturing Processes

This camping stove is made from mild steel and is chrome plated. It has three arms which are also made from mild steel and also which have grooves which are machine drilled to stop the pots and pans from sliding. The three arms are joined to the metal base by standard components and can be loosened for the arms to adjust. The bafflers are pressed and stamped to make the design and locks into place on the burner itself.

Aesthetics and Ergonomics

This camping stove has a very slim line shape as it is very compact. The colour makes it stand out with the painted bright orange base and shiny silver arms. There is not very good balance as the stove does not have any legs to stabilise it. It is also well in proportion with the pot supports and burner. It is also very easy to use the spring clip adjusting the amount of gas flow. The gas is connect to the stove via a pipe which the connects an opening in the orange base. The dimensions of this stove is 46 x 46 x 105mm, weighs 103g and its retail price is £13.00.

MSR XGK EX

Function

This camping stove has a lot of different functions. Firstly it buns many fuels such as petrol, diesel, kerosene, butane and propane. It is also very easy to maintain as it cleans fuel with a simple shake. A weighted needle nests inside the jet and when the stove is on, fuel will flow around this needle. When the stove is not in use, this needle will push any debris through the jet's opening with a simple upside-down shake.

Design Features

One of the most noticeable design features is the windshield. It protects the burner from the wind meaning that it can heat quickly and efficiently. Another feature is the retractable legs and pots supports. They are able to fold into itself providing a very compact and easily stored stove.

Materials and Manufacturing Processes

This camping stove is made from a mixture of mild, stainless and blackened steel. The three pot supports and legs are made from mild steel providing valuable strength needed to hold heavy pots which are also chrome plated. They are also stamped and folded to produce the design. The burner is made from stainless steel and finally the windshield is made from blackened steel. The windshield is made from this material because it has very good protection properties against the elements. Notches are also made into the pot supporters to keep the pots and pans from sliding.

Aesthetics and Ergonomics

It fits into its environment straight away with its easy storage and easy to use ability. It looks very classy and expensive with the dark black complimentary with the shiny silver. It has very good balance with 3 legs with notches on them to provide more grip on the ground. It is also very easy to use, with simple folding of the legs and easy attachments to gas. The dimension of this stove is 76 x 86 mm and has a retail price of £112.00.

Redesign solutions and development

- High (21-30)
- Write a detailed redesign specification.
- Generate a wide range of innovative design modifications
- Evaluate in detail the viability of each modification.
- Present a detailed plan for manufacture.
- Produce high level working drawings for manufacture

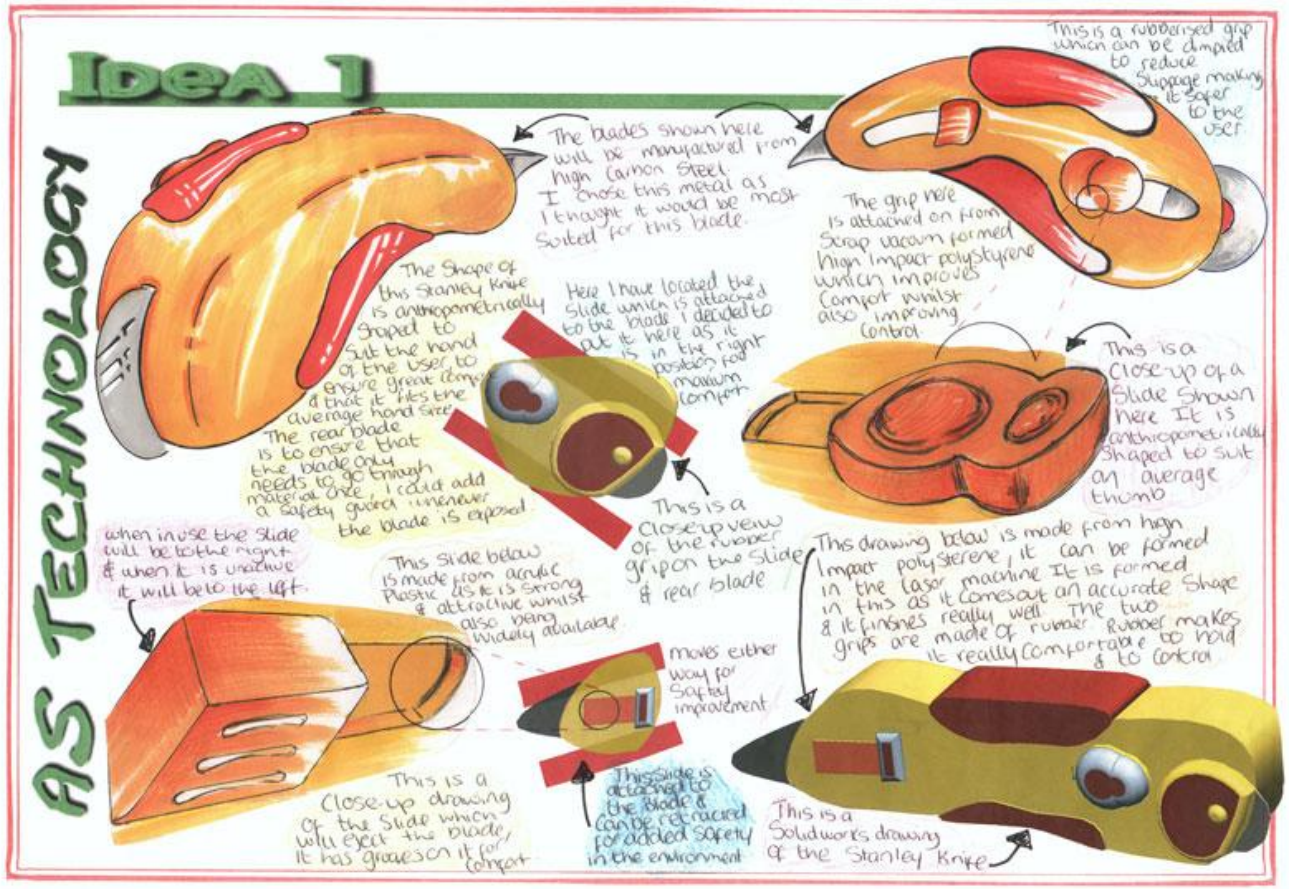
Redesign solutions and development

- Medium (11-20)
- Write an appropriate redesign specification.
- Generate a suitable range of innovative design modifications.
- Evaluate in some detail the viability of each modification.
- Present an adequate plan for manufacture with suitable detail.
- Produce adequate working drawings for manufacture.

Redesign solutions and development

- Low (1-10)
- Write a limited redesign specification
- Generate a limited range of innovative design modifications.
- Present only vague evaluation of the viability of each modification.
- Present a limited plan for manufacture.
- Produce only limited working drawings for manufacture.

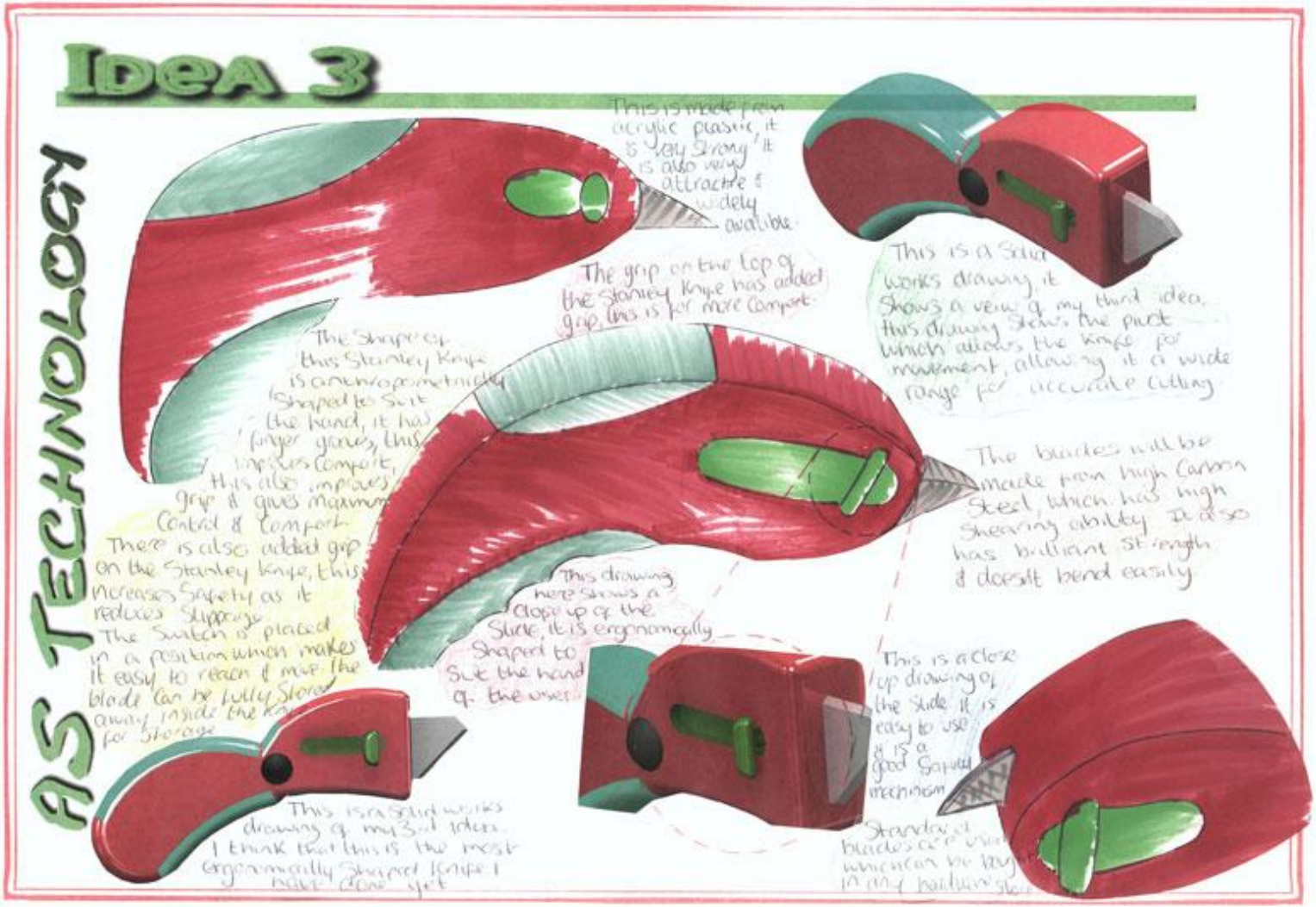
Zero should be awarded for a response which is not worthy of any credit.



I am enough of an artist to draw freely upon my imagination.
Albert Einstein

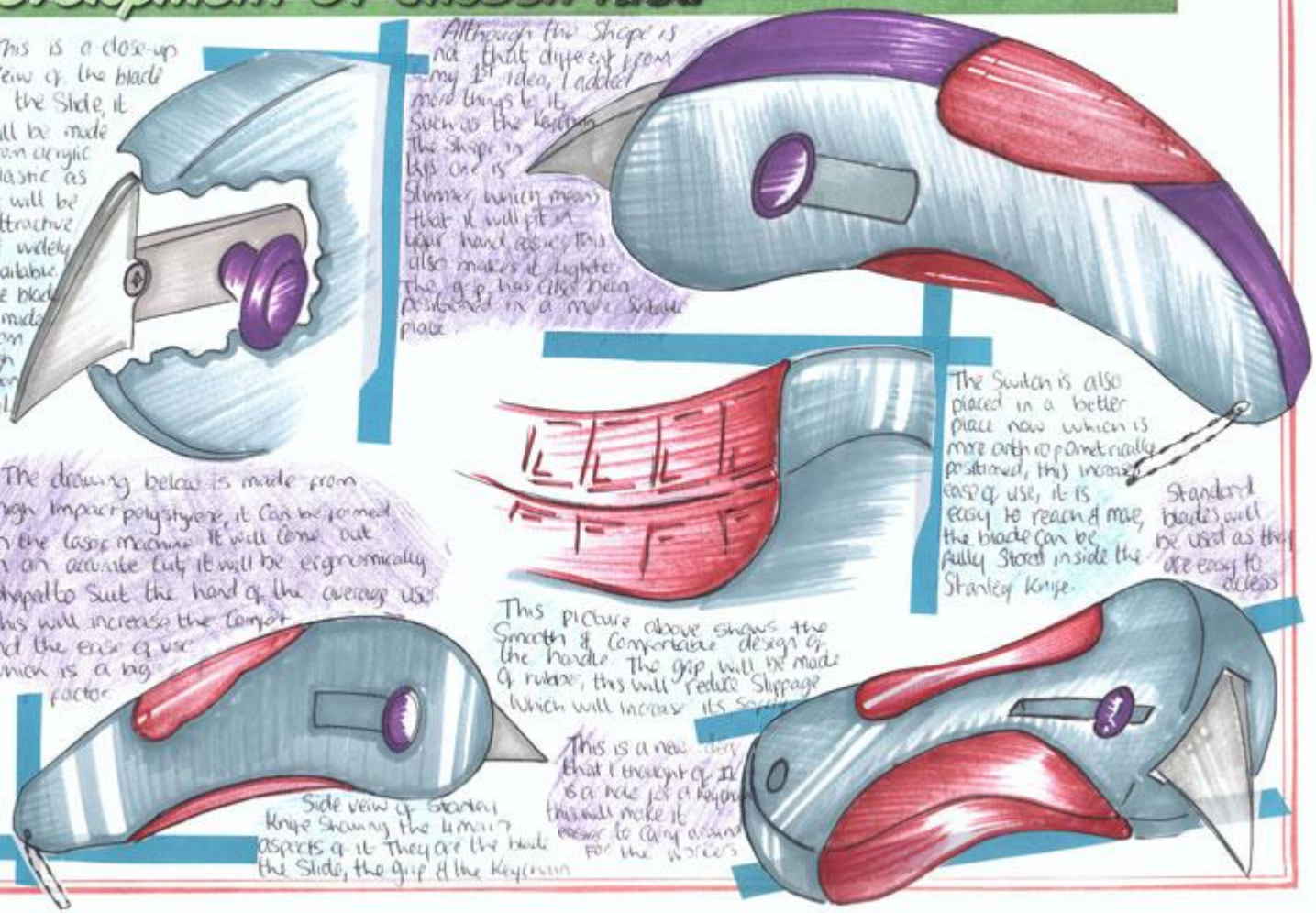
AS TECHNOLOGY

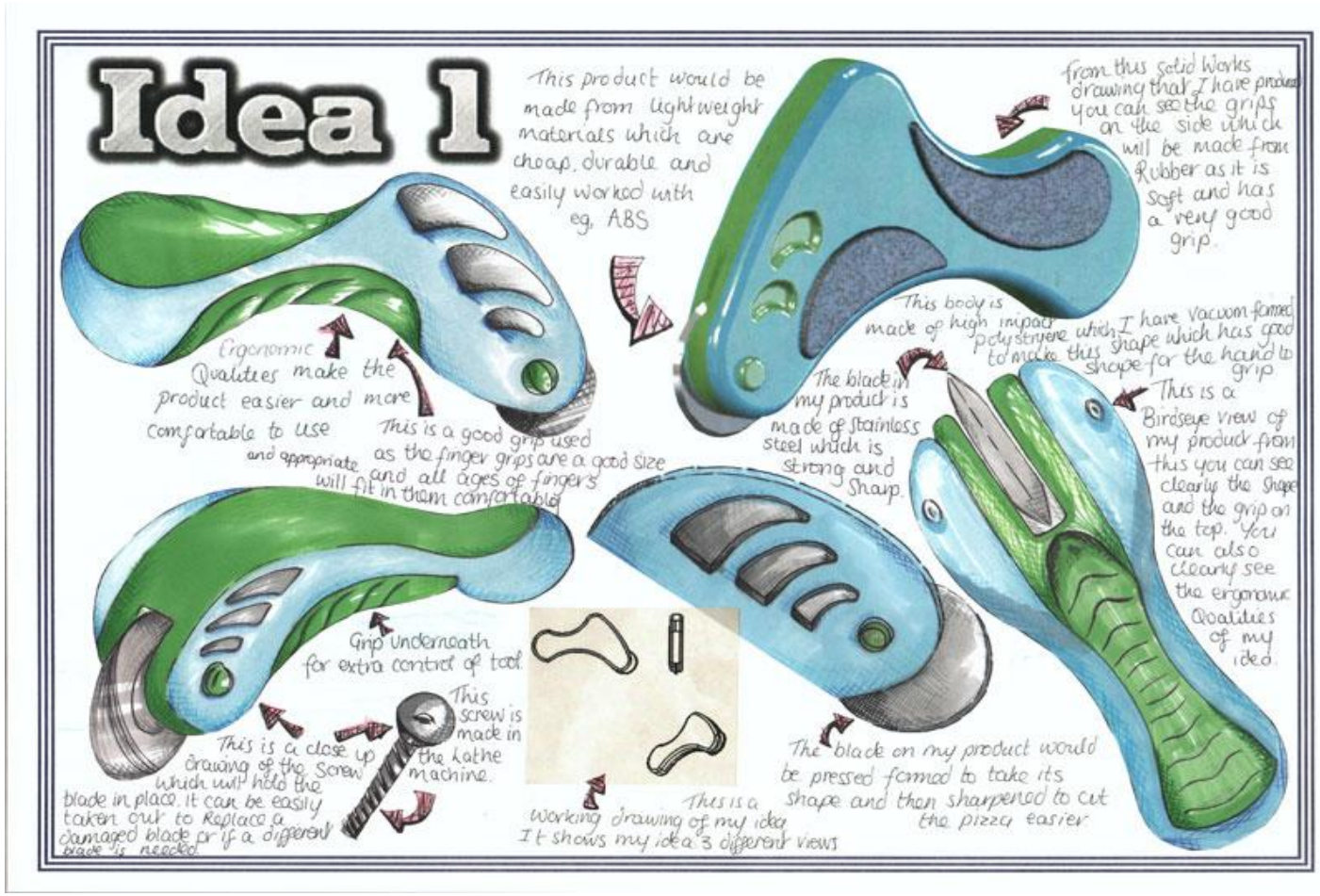
IDEA 3



Development Of Chosen Idea

AS TECHNOLOGY





Design is intelligence made visible.
Alina Wheeler

project : soldering iron

1) Function
•The soldering iron must be comfortable and easy to carry around.
•Should have a round surface to hold the soldering iron when not in use.

•2) Anthropometrics
•The size of the iron should be one which can fit in the average persons hand (which is around 80mm wide), and so should be around 20mm in, at most, mid-amount, so it is small enough to be held comfortably.

3) Weight
•The soldering iron should preferably be light weight, and no heavier than 100gs as will allow the user to hold the iron without any strain on their hand.

4) Ergonomics
•It should preferably have no cables, to prevent restricting the users movements.
•Must have a comfortable shaped grip and allows one to securely hold it in their hand.

5) Safety Features
•It should have a method to show when the soldering iron is hot enough to be used, and cold enough to be put away.
•Needs to have a indicator to show that the iron is switched on
•Needs to have a way to cover the iron when not in use.

6) Aesthetics
•The iron needs to have a high quality finish and a professional colour scheme, which will appeal to the consumer, thus encouraging more people to buy the product.

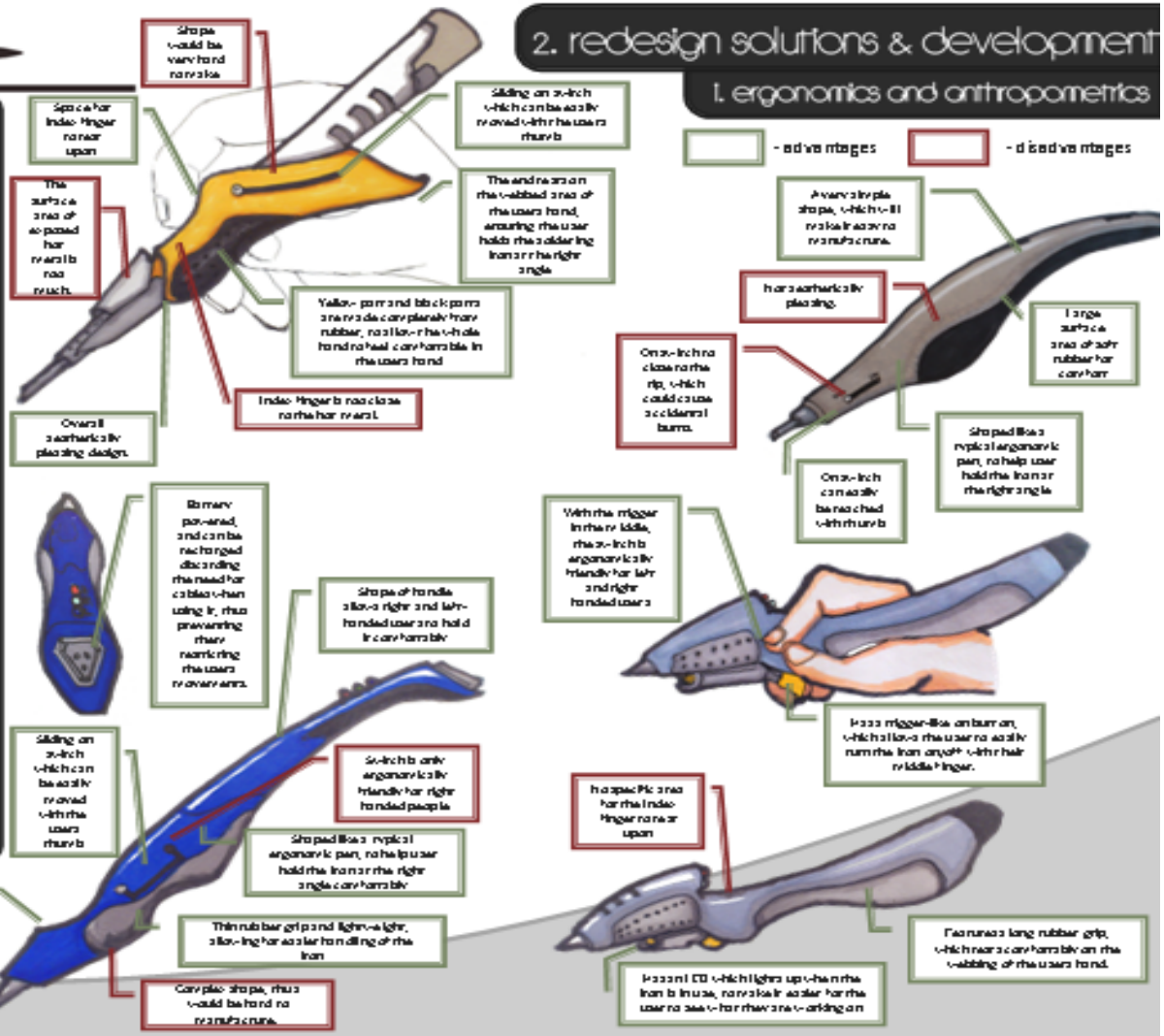
7) Cost
•The product should not be too expensive, and between £20 to manufacture, as if it is too expensive, it will put off potential customers and if cheaper it will appeal to more customers overall.

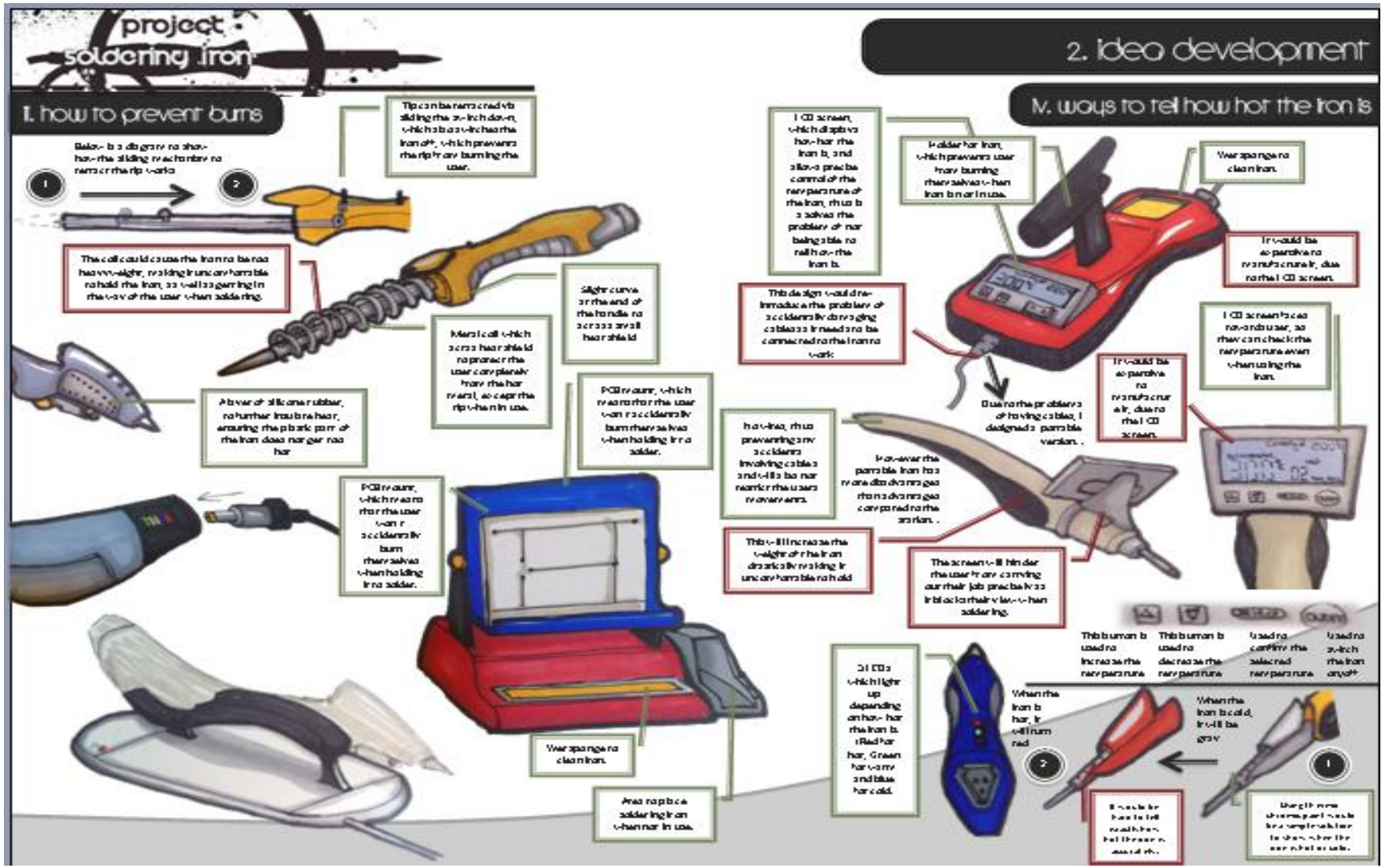
8) Materials
•It needs to be made of a material that can withstand hot temperatures, at around 200 degrees, without melting.
•Should be durable and last for years.

2. redesign solutions & development

I. ergonomics and anthropometrics

- advantages
- disadvantages



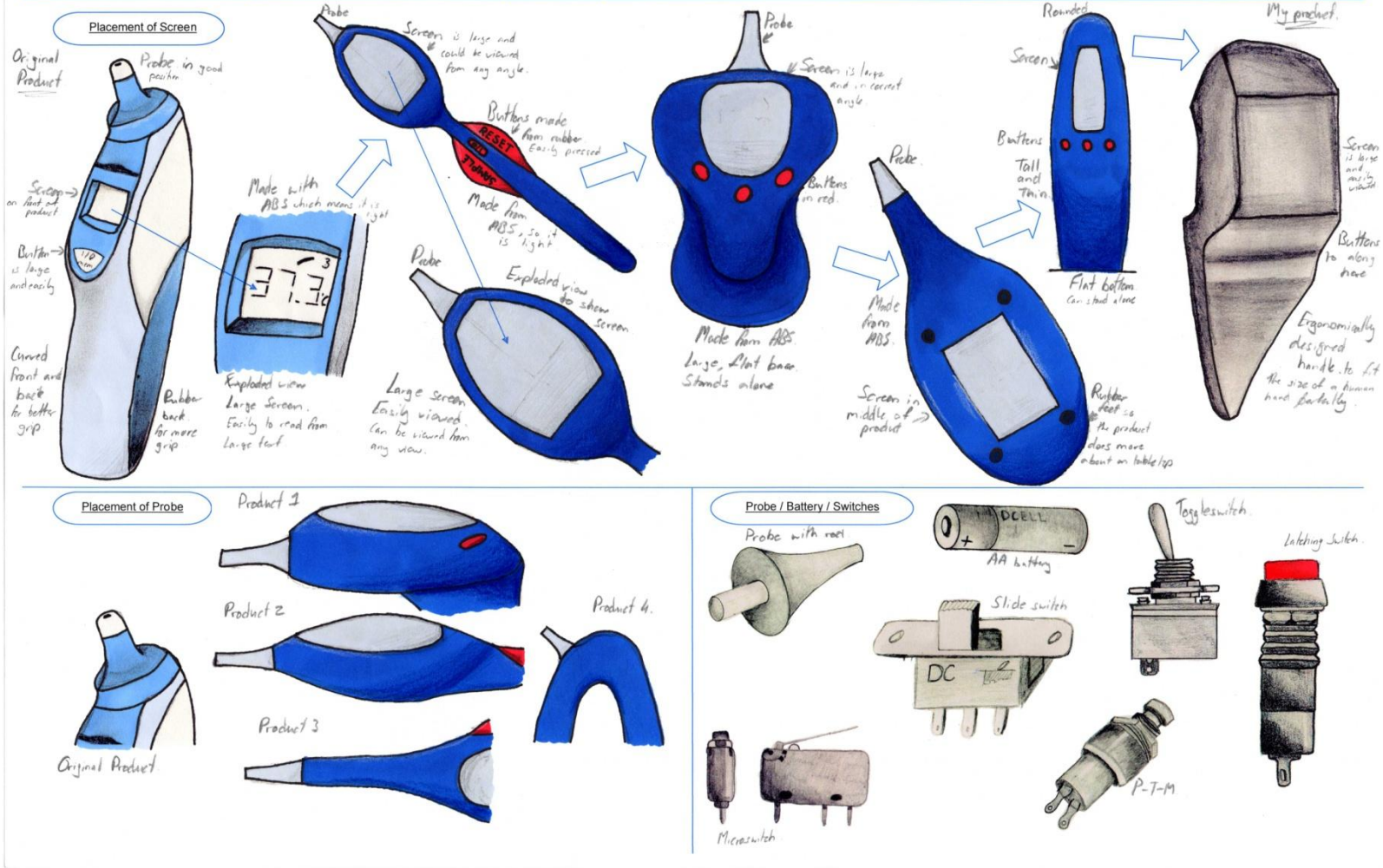

project : soldering iron
2. idea development
I. how to prevent burns
Below is a diagram to show how the sliding mechanism to remove the tip works
Tips can be removed by sliding the switch down, which also switches the iron off, which prevents the right hand burning the user.
The coil could cause the iron to become heavy-weight, making it uncomfortable to hold the iron, as well as getting in the way of the user when soldering.
Metal coil which acts as heat shield to protect the user completely from the hot metal, except the tip when in use.
Slight curve at the end of the handle to act as a heat shield
A layer of silicone rubber, to further insulate heat, ensuring the plastic part of the iron does not get too hot
PCB insulator, which is to protect the user from accidentally burning themselves when holding it in a solder.
PCB insulator, which is to protect the user from accidentally burn themselves when holding it in a solder.
Wet sponge to clean iron.
Area to place soldering iron when not in use.
IV. ways to tell how hot the iron is
LCD screen, which displays how hot the iron is, and allows precise control of the temperature of the iron, thus is a solves the problem of not being able to tell how hot the iron is.
Soldering iron, which prevents user from burning themselves when iron is not in use.
Wet sponge to clean iron.
This design would introduce the problem of accidentally damaging cables as it needs to be connected to the iron to work.
It would be expensive to manufacture it, due to the LCD screen.
LCD screen is easy to read by user, so they can check the temperature even when using the iron.
Due to the problems of having cables, I designed a portable version. .
It would be expensive to manufacture it, due to the LCD screen.
However the portable iron has more disadvantages than advantages compared to the iron. .
However, this is preventing any accidents involving cables and will be not restrict the users movements.
This will increase the weight of the iron drastically making it uncomfortable to hold
The screen will hinder the user from carrying out their job precisely as it blocks their view when soldering.
This button is used to increase the temperature
This button is used to decrease the temperature
Used to confirm the selected temperature
Used to switch the iron on/off
31 LEDs which light up depending on how hot the iron is. (Red for hot, Green for warm and blue for cold.
When the iron is hot, it will turn red
When the iron is cold, it will be grey

Idea 2


This is a 2 point perspective drawing of my product. This would be made from cheap, lightweight, durable, aesthetically pleasing material such as ABS
The blade on my product would be pressed formed to take its shape and then sharpened to be able to cut the pizza easily
From these 2 solid works drawings I have produced you can see the grips on the handle which will be made from Rubber as it is soft and provides a very good grip
This is a good grip size used as the finger grip sizes are appropriate to fit hands and fingers of all ages so they can use the product comfortably
High Quality foam or Rubber spacers are added so that the blade is stable when using the product
This is a working drawing of my idea. It shows my idea in 4 different views
Ergonomic qualities make the product easier + more comfortable to use
Individual finger grips
The body is made from High Impact polystryene which I would Vacuum form to make this shape which is a very suitable shape to ensure a comfortable grip
Grip underneath the handle for extra control of the tool.
This is a Solid Works drawing of a side-view of inside the product. It shows the blade secured inside the casing fixed by a screw.
The blade will be fixed on an Axel so it will be only able to cut a certain length at a time
very attractive colour + qualities to the casing to enhance Aesthetic qualities of product
The blade is fixed on by 2 screws which can be easily removed + Replaced if the blade needs changed if damaged
close up of the screw holding the blade on a fixed Axel

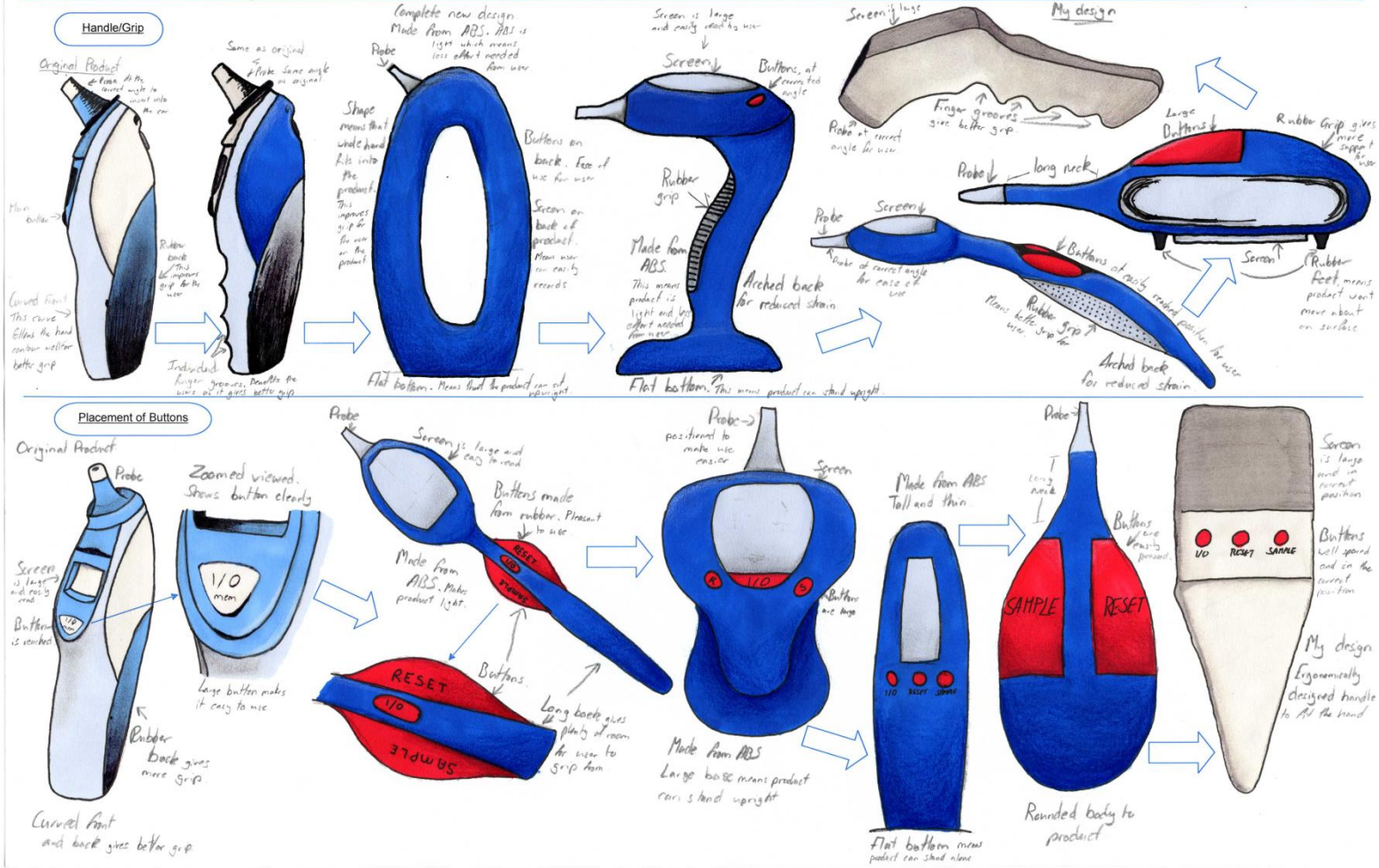
Ear Thermometer

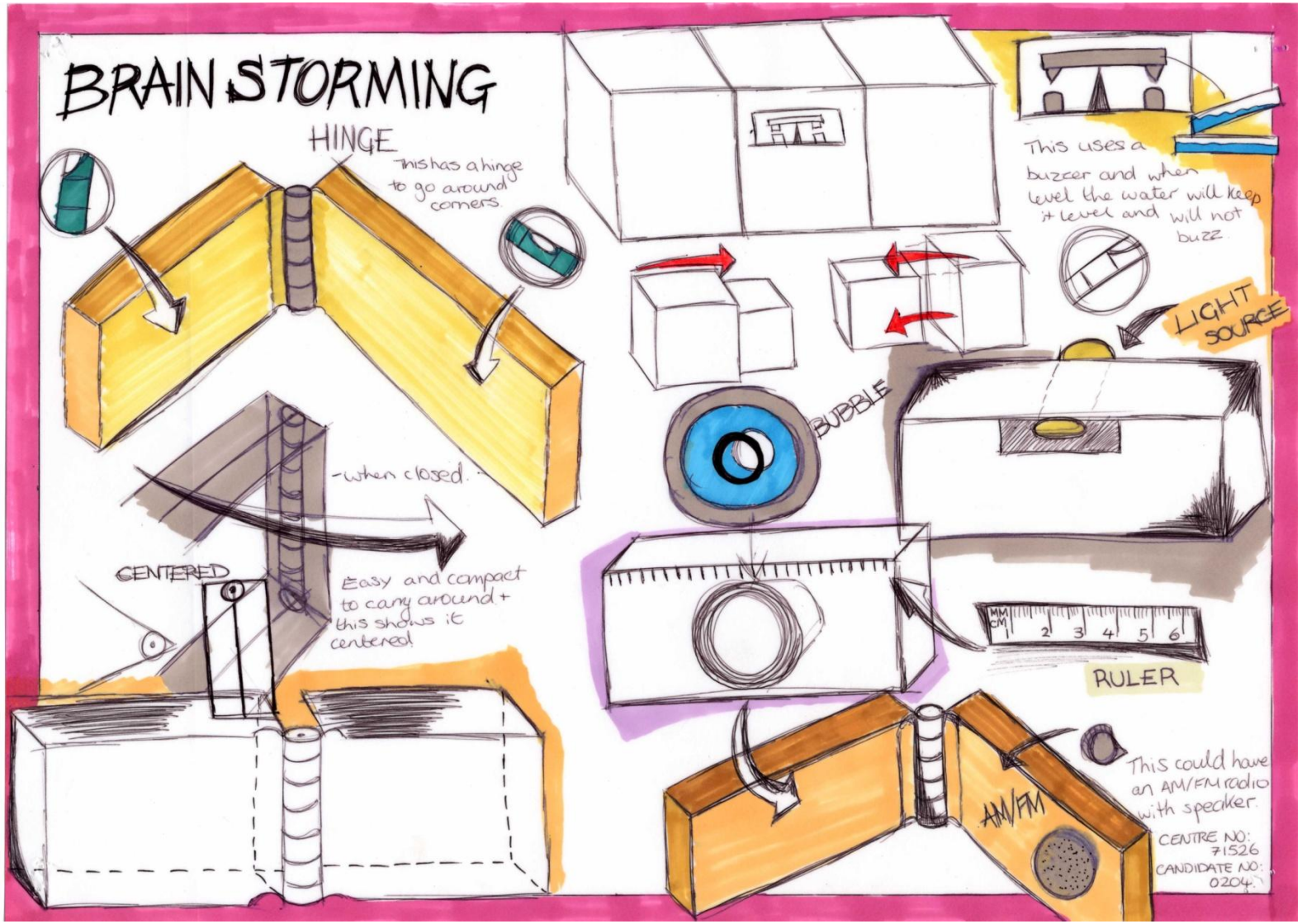
Investigation and Analysis | Redesign Solutions and Development | Manufacture | Testing and Evaluation

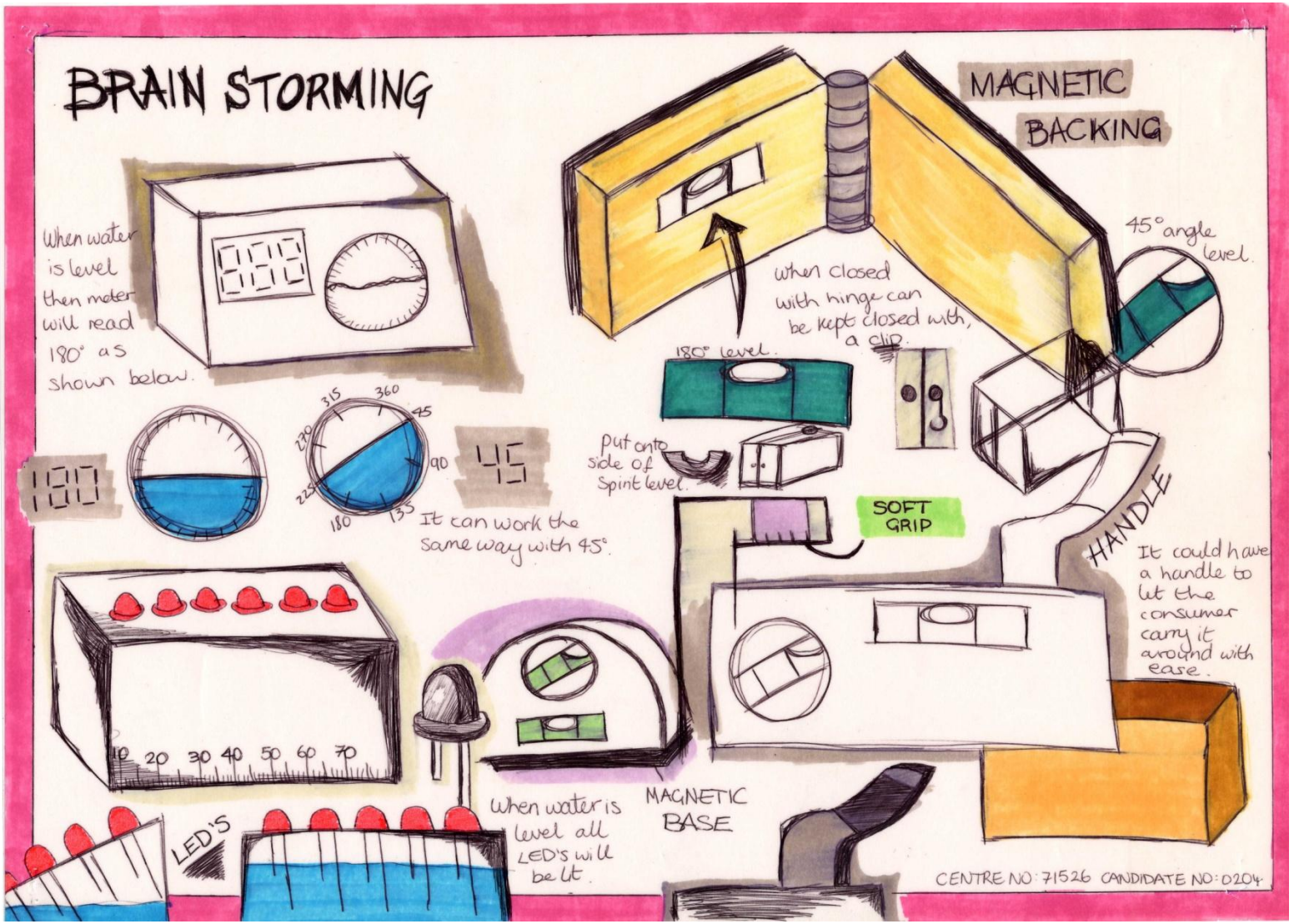


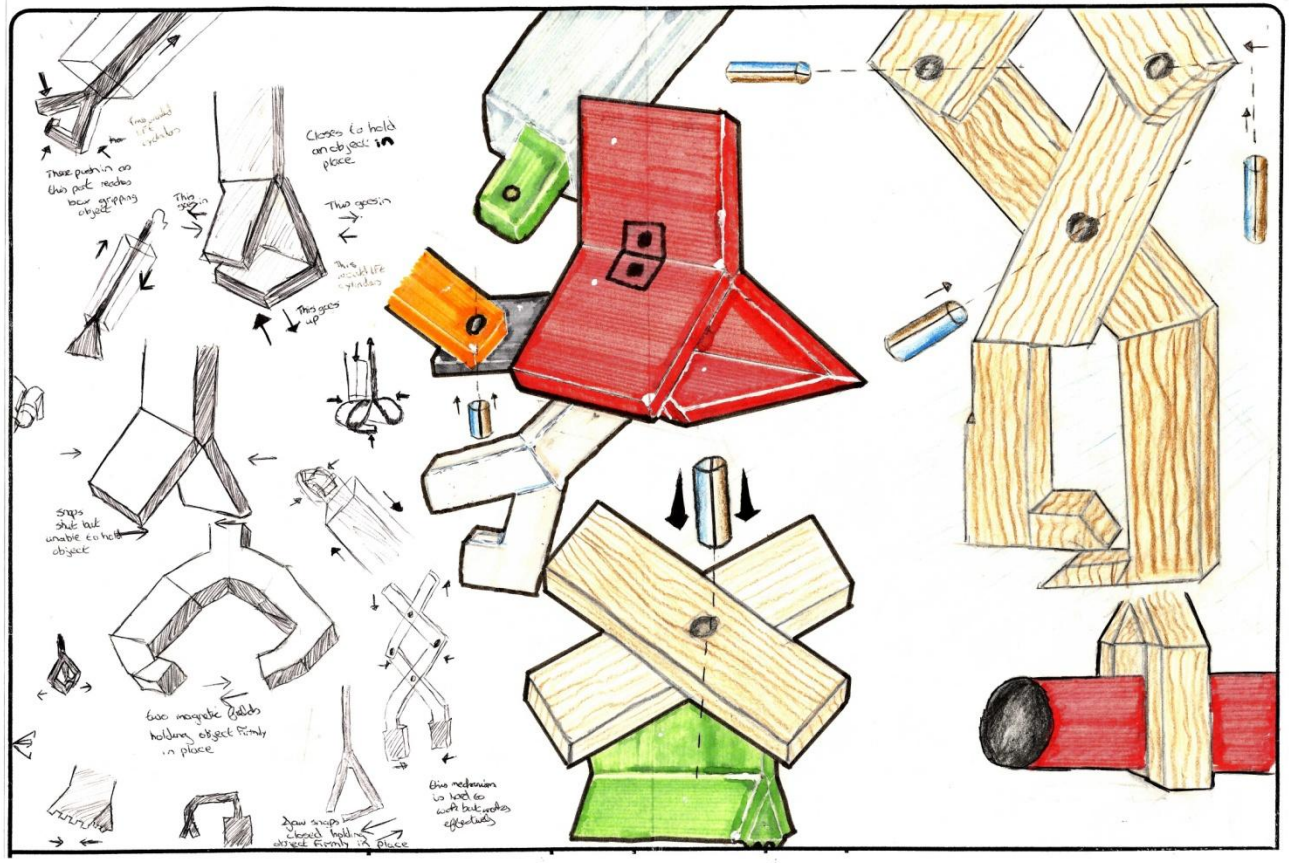
Ear Thermometer

Investigation and Analysis | Redesign Solutions and Development | Manufacture | Testing and Evaluation




BRAIN STORMING
HINGE
this has a hinge to go around corners
-when closed-
CENTERED
Easy and compact to carry around + this shows it centered
This uses a buzzer and when level the water will keep it level and will not buzz
LIGHT SOURCE
BUBBLE
MM CM 1 2 3 4 5 6
RULER
AM/FM
This could have an AM/FM radio with speaker.
CENTRE NO: 71526
CANDIDATE NO: 0204

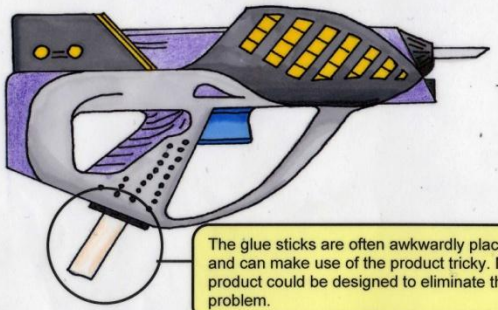

BRAIN STORMING
When water is level then meter will read 180° as shown below.
180
45
It can work the same way with 45°.
MAGNETIC BACKING
when closed with hinge can be kept closed with a clip.
45° angle level.
180° level.
put onto side of spirit level.
SOFT GRIP
HANDLE
It could have a handle to let the consumer carry it around with ease.
10 20 30 40 50 60 70
LED'S
When water is level all LED's will be lit.
MAGNETIC BASE
CENTRE NO: 71526 CANDIDATE NO: 0204


Rewarding Learning

Glue Gun

1. Investigation and Analysis Of Product | 2. Re- design Solutions and Development | 3. Manufacture | 4. Testing and Evaluation

Technical Design Modifications

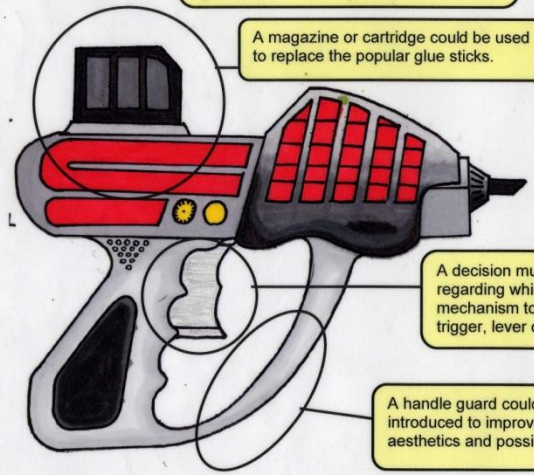


The glue sticks are often awkwardly placed and can make use of the product tricky. My product could be designed to eliminate this problem.

The power cable is often awkwardly placed and can make use of the product awkward. My product could be designed to eliminate this problem.

A front mounted handle grip could stabilise the product during use making application more precise.

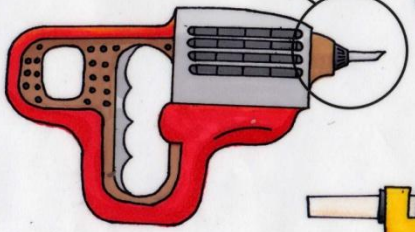
A magazine or cartridge could be used to replace the popular glue sticks.



A decision must be made regarding which delivery mechanism to use be it trigger, lever or pump.

A handle guard could be introduced to improve safety, aesthetics and possibly balance.

The nozzle of the product could be longer and flexible allowing the user to apply glue into tight areas he couldn't otherwise access.



A rear handle grip could stabilise the product during use making application more precise.

Glue Gun

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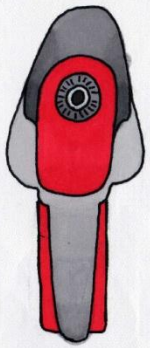
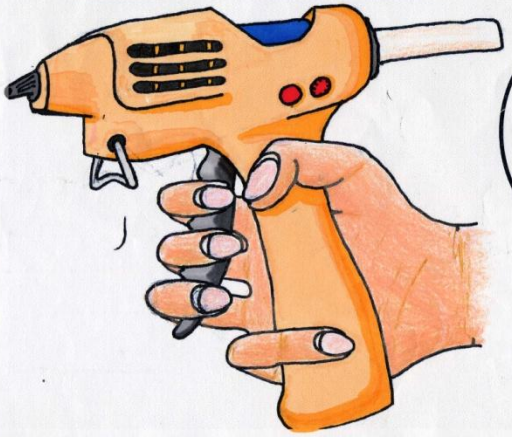
Technical Design Modifications

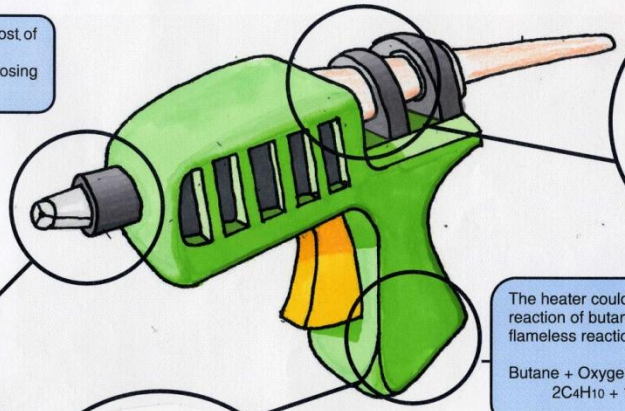


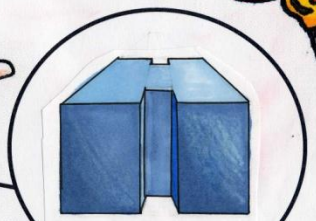
Front Profile

Balance, weight and cost of materials must all be considered before choosing a design.

An Adjustable precision applicator similar to the… of a modern screwdriver could be used to ensure accurate application of glue.





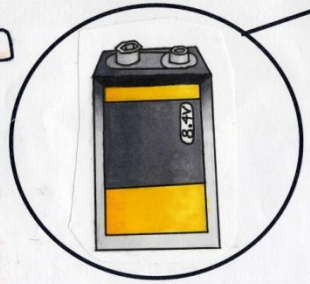


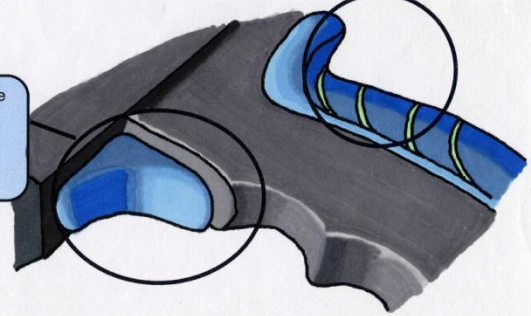
The heater could be fuelled in the catalytic reaction of butane with oxygen in a non toxic flameless reaction.

Butane + Oxygen = Carbon Dioxide + Steam

$2C_4H_{10} + 13O_2 = 8CO_2 + 10H_2O$

Handle must be designed to maximise grip and ergonomics.



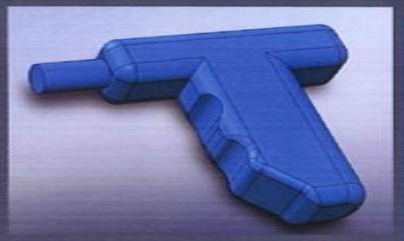


The trigger shape and size must be altered to maximise comfort and ease of use while maintaining aesthetics.

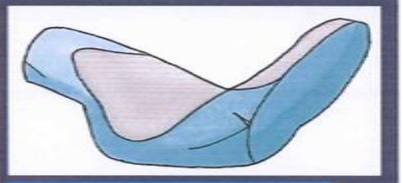
Additional Features
The product could have several additional features for ergonomic purposes. Such features could include: on/ off switches, support stands and heat indicator

Handle Ideas!

This handle design is a simple design that will be comfortable in the hand to use and will be made of a sturdy ABS material. The front of this handle will also be coated with rubber sleeve to maintain the grip of the user over time.



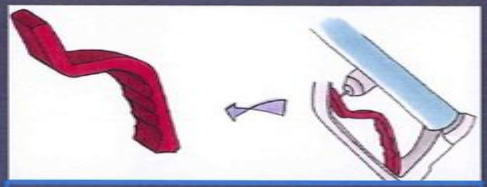
This design will be fabricating using a combination of MDF and zinc coated aluminium to avoid the hazard of sparks from the nozzle. This design has finger groves for the comfort of the user and the back of the gun shaped handle arches out to fit the natural grove in the persons hand.



This is a more complex handle design that will fit the hand of the average man or women to make long distance journeys and time consuming filling up more comfortable. Because this deign will be so hard to manufacture I will injection mould this product using ABS to leave a two piece part that will be fitted leaving a small split line.

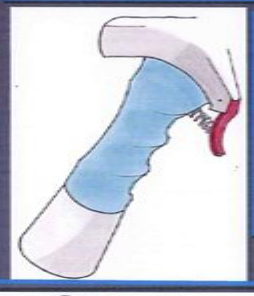
This design again will be fabricated from MDF and acrylic for the rounded head of the product. This will be a practical option for manufacturing and the groves again are there for the comfort of the user, along with the bump on the back of the handle.

Trigger Ideas!



This is a trigger mechanism that works with a pressure rod placed behind the trigger. When the axel is pushed the gauge will detect the change in pressure and deliver fuel down the nozzle of the gun.

This is another trigger design that will be made from acrylic and will be sprung loaded with a lock to solve the issue of hand strain. The lock will be operated by a button on the right hand side.



This trigger is also sprung loaded like a pistol trigger but will only need the index finger to operate it. Although this design will be easier to manufacture it may cause strain on the user's finger. This trigger will be made using acrylic and file be filed to shape.

This is a trigger mechanism that will be fabricating in the CNC machine from acrylic . The notch that is shown will be used to be pushed against a spring inside the casing that will allow the trigger to be sprung back once released.

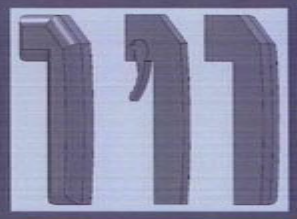
The design of this handle is very different from the standard shape. The handle for the user is at the top and will be made from aluminium coated with rubber for grip. It will also have a torch on the far end of the grip for if it's dark. The tubing for the fuel comes out of the back of the product. This design has no trigger because it was made to be a hands free set operated from the main pump.

This trigger is located on the top of the fuel gun. Again there Is no display needed on the actual handset because all of the controls for this particular design will be operated from the pump not the dispenser. It is simply a push button which initiates the flow of fuel.

Product Development

This is how I will want my final design to be assembled so that the triggered is concealed within the shell of the product. It will be the middle layer of my final piece that will be fabricated form MDF and will measure at 8mm. Along with this the sprung loaded trigger will be fitted and sandwiched in-between the two outer layers of the final product.

This shows how the trigger will fit in the inside layer of the product. This image shows the trigger in it's relaxed state and so the trigger is not flexed.

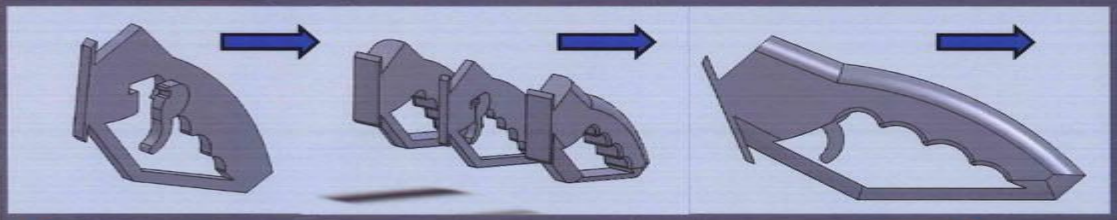


This image displays how the inside layer will be sandwiched in-between the two outer layers and how the final product will be sealed and formed.

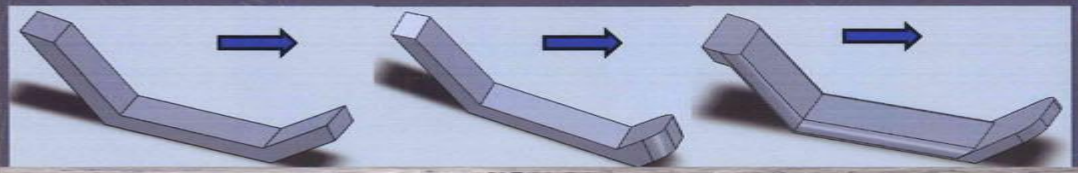
This is a draft of what my final idea might look like. However I do not like the simplicity of this design and it just looks plain at first glance. In this picture it clearly displays the MDF layers fitted together along with the acrylic trigger

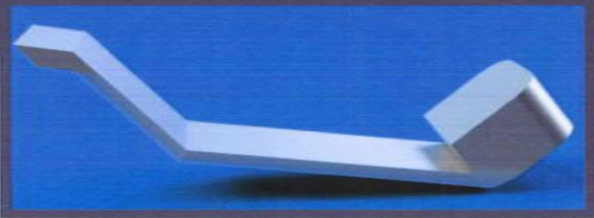
Because I did not like the simplicity and bulkiness of the previous design, I have decided to angle the product so that the nozzle will go into the inlet more naturally. I have also added finger groves for the aid of the user.

This is the concept deign of my final piece once it has been assembled. The hole created will be where the spout or nozzle will be inserted. However the issue with this design is that that it will be complicated to add the hose to carry the fuel too, and so further modifications may need to be made.



This sequence of modifications and development where made throughout the thought of the design. When the product was first considered it had very few features and had sharp edges. Also the additional block at the end of the guard was added to allow for more finger space when holding the handset

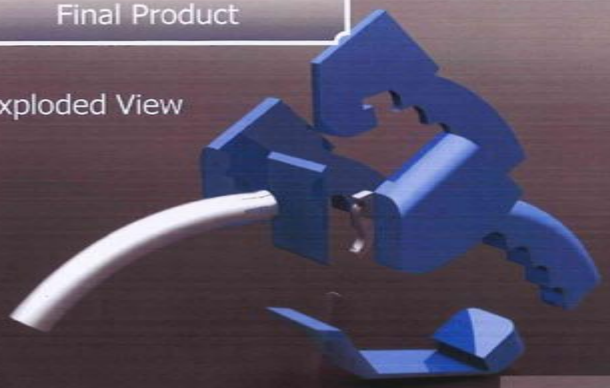


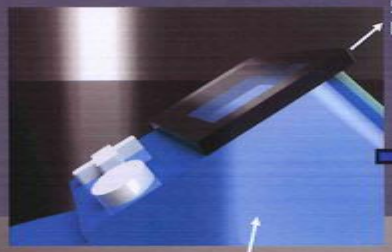


Rewarding Learning

Final Product

Exploded View

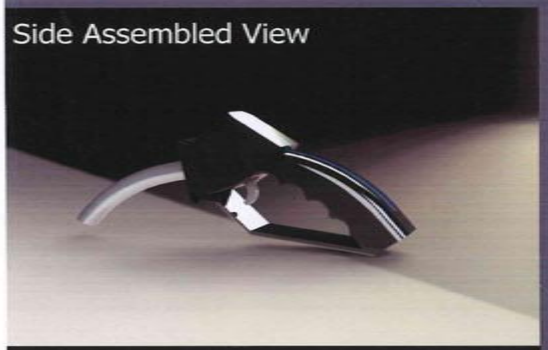


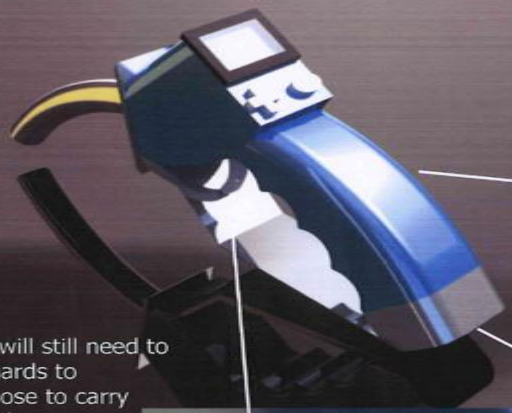


5mm Raise

Finalised display and interface design

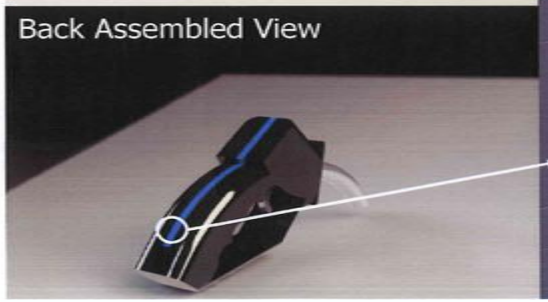
Side Assembled View



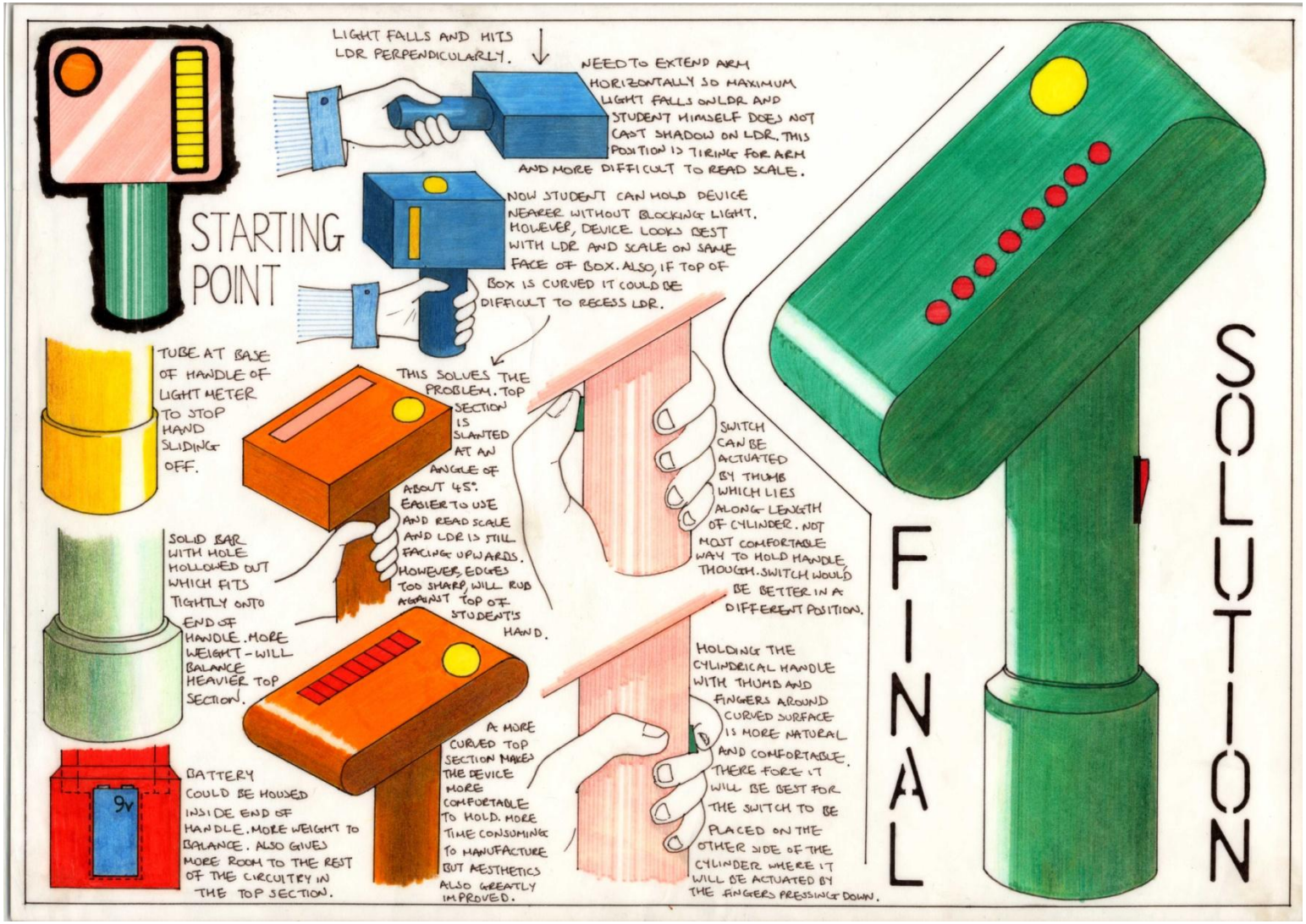


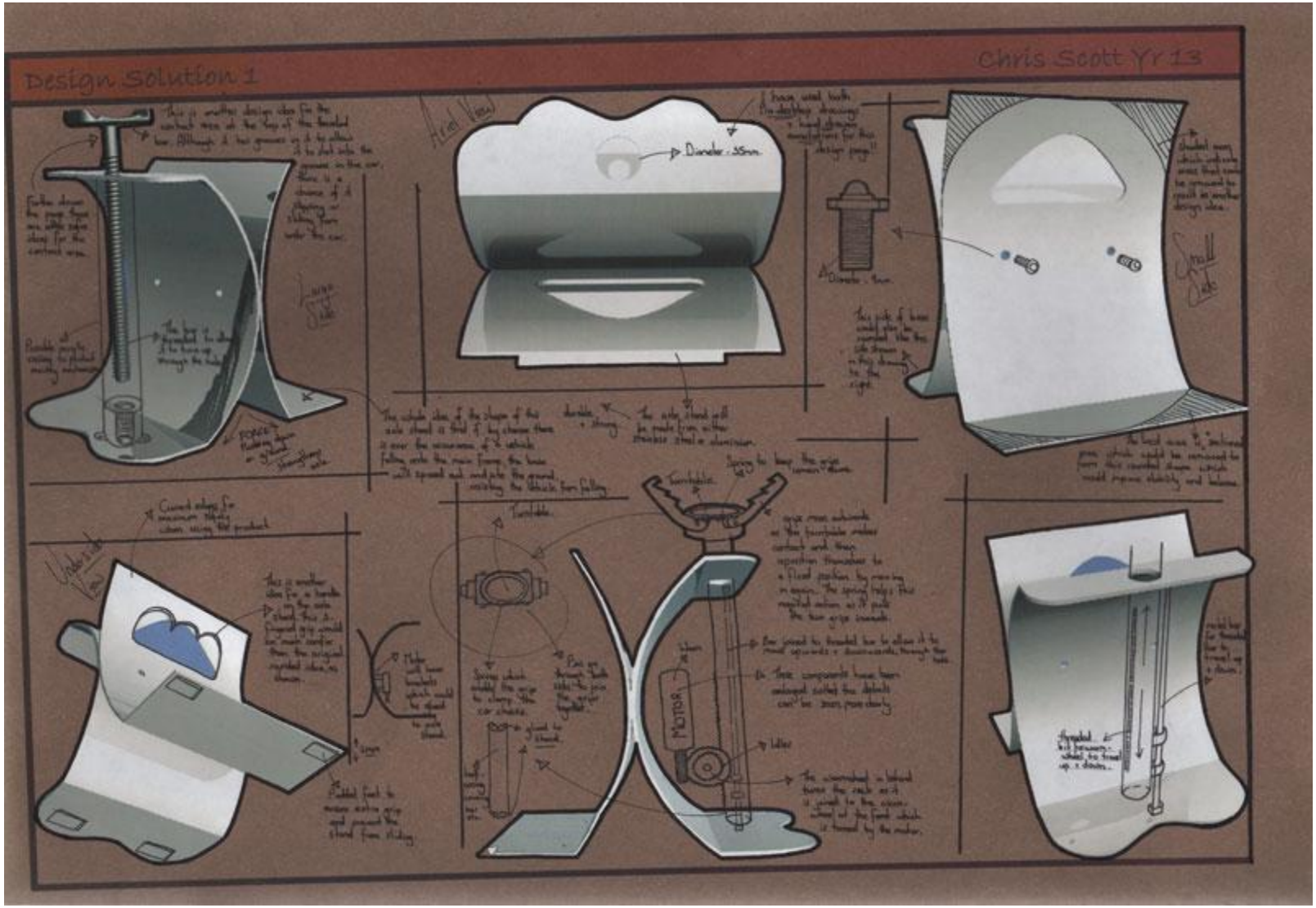
A modification will still need to be made in regards to attaching the hose to carry the fuel to the dispenser.

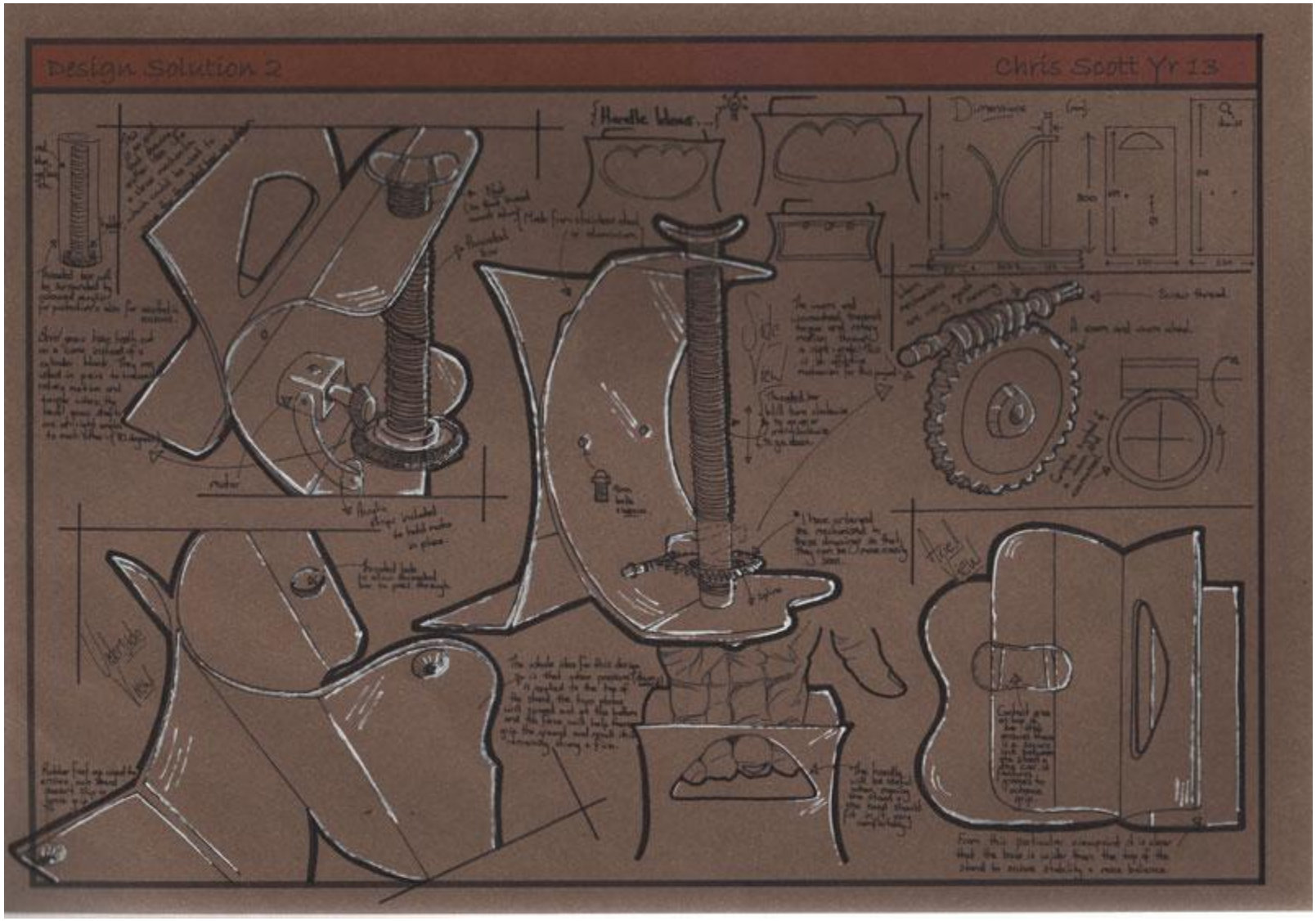
Back Assembled View



Coloured strip to tell the user the type of fuel for example green for petrol and blue for diesel


STARTING POINT
LIGHT FALLS AND HITS LDR PERPENDICULARLY.
NEED TO EXTEND ARM HORIZONTALLY SO MAXIMUM LIGHT FALLS ON LDR AND STUDENT HIMSELF DOES NOT CAST SHADOW ON LDR. THIS POSITION IS TIRING FOR ARM AND MORE DIFFICULT TO READ SCALE.
NOW STUDENT CAN HOLD DEVICE NEARER WITHOUT BLOCKING LIGHT. HOWEVER, DEVICE LOOKS BEST WITH LDR AND SCALE ON SAME FACE OF BOX. ALSO, IF TOP OF BOX IS CURVED IT COULD BE DIFFICULT TO RECESS LDR.
TUBE AT BASE OF HANDLE OF LIGHT METER TO STOP HAND SLIDING OFF.
THIS SOLVES THE PROBLEM. TOP SECTION IS SLANTED AT AN ANGLE OF ABOUT 45°. EASIER TO USE AND READ SCALE AND LDR IS STILL FACING UPWARDS. HOWEVER, EDGES TOO SHARP, WILL RUB AGAINST TOP OF STUDENT'S HAND.
SWITCH CAN BE ACTUATED BY THUMB WHICH LIES ALONG LENGTH OF CYLINDER. NOT MOST COMFORTABLE WAY TO HOLD HANDLE, THOUGH. SWITCH WOULD BE BETTER IN A DIFFERENT POSITION.
SOLID BAR WITH HOLE HOLLOWED OUT WHICH FITS TIGHTLY ONTO END OF HANDLE. MORE WEIGHT - WILL BALANCE HEAVIER TOP SECTION.
A MORE CURVED TOP SECTION MAKES THE DEVICE MORE COMFORTABLE TO HOLD. MORE TIME CONSUMING TO MANUFACTURE BUT AESTHETICS ALSO GREATLY IMPROVED.
HOLDING THE CYLINDRICAL HANDLE WITH THUMB AND FINGERS AROUND CURVED SURFACE IS MORE NATURAL AND COMFORTABLE. THEREFORE IT WILL BE BEST FOR THE SWITCH TO BE PLACED ON THE OTHER SIDE OF THE CYLINDER WHERE IT WILL BE ACTUATED BY THE FINGERS PRESSING DOWN.
9v
BATTERY COULD BE HOUSED INSIDE END OF HANDLE. MORE WEIGHT TO BALANCE. ALSO GIVES MORE ROOM TO THE REST OF THE CIRCUITRY IN THE TOP SECTION.
FINAL SOLUTION


Design Solution 1
Chris Scott Yr 13
Diameter 35mm
Turntable
MOTOR


Design Solution 2
Chris Scott Yr 13

Design Solution 2

The three photographs to the right show the handle and trigger of the speed gun. The first image shows the trigger of the gun. The trigger is very small and light so the user doesn't have to use a lot of force to move the trigger. The trigger would be manufactured from aluminium as it is very strong and durable but is also lightweight. It is very attractive with a high polish finish which will attract customers to buy the device. The trigger has been designed to fit the user's index finger very comfortably. The second image shows the handle of the gun which has been design to fit perfectly to the users hand. The edges have been curved to make it more comfortable for the user to grip. The final photo shows the back of the handle which I designed a groove fro the users palm and thumb

The two photos on the left shows the full speed gun. The gun has a very stylish design with curved edges. These make the gun very eye catching which will attract more buyers and boost sales and profit. The gun has an eye catching red gloss finish with matt black stripes which greatly adds to the overall aesthetic look of the finished product

The photo to the left is a frontal view of the speed gun. This shows how the gun goes to a point which will make it very accurate and precise at measuring the speed of the object the user wants. The front is rounded for safety if the user drops the product

The picture to the right shows the controls of the speed gun. The buttons are placed on a flat surface which makes it easier for the user to see and control them which will improve the efficiency of the speed gun. The buttons would be made out of rubber as this makes more comfort for the user to press. There are very little controls on the device which improves the ergonomics of the device. There is a very big screen for easy reading

The three images below show how the screen is revealed and shadowed by the cover. The cover works on a track with runners that slide along the track and hinge over at the top so that the cover will act as an umbrella to shadow the screen. The screen needs to be shadowed as the screen can be difficult to read in bright light so the cover shadows the sun so the user can read the screen. The cover is very elegant with curved edges which is very aesthetical pleasing which will make the speed gun more eye catching. The cover has a flat face at the back. This makes it easier for the user to open the screen with just a push with their thumb. The cover will be made from a strong plastic such as ABS as it needs to be strong yet durable

The images above show how the stand for the device hinges out so that the speed gun can be set on the ground or can be lent on a surface so that it is more stable. This is helpful for people with shaky hands so that they are able to aim the gun at what they want. This will make the gun more efficient which will please the user. The stand hinges out from the back of the device at 150 degrees. The stand will be held on the handle with magnets, one on the bottom of the stand and one on the back of the handle. The hinge will be made from aluminium as it is very strong and durable. It also has a very good finish on it which is very aesthetical pleasing which will attract the modern generation of young people

Hand sketch of the design with the stand out at the back

Design Solution 3

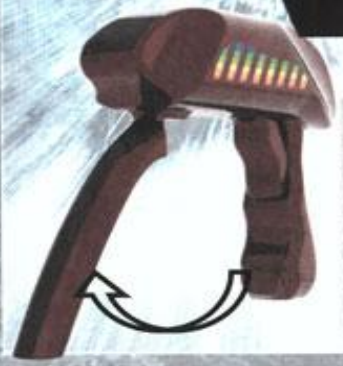
The buttons are designed to be comfortable to touch with smooth curved edges and a rubber texture. The buttons are big and spaced out so that the user can press the right button without pressing the other buttons. Each button is a different size or shape so that the user can use them without looking; by know what each button is. The screen is quite big for easy reading. The control panel has been designed this certain place so that the user can control the gun while they are still using it with ease

The image to the left shows the controls and screen of the speed gun. There are very little controls on the gun which makes it simpler and trouble free and therefore fasted to use. There is an On/Off button, two arrow buttons to view previous speeds, a button to change for MPH to KPH and a TV output button

The two images on either side show the handle for my device. The handle has been curved at the back for the palm of the hand to have a comfortable hold. The front I have cut out finger curves to make it easier to grip and a lot more comfortable. All the edges have been curved to make it look better but also to make it comfy to clutch. The design on the right I have given a rubber texture around the handle which would give a more secure grasp of the gun

The photo above shows the cover that flips up to reveal the screen. This cover shadows the screen from sunlight as it is very difficult to see a screen in bright sunlight. This cover will just pivot from a hinge which will be hidden in the device

The picture on the right shows the trigger of my design. The trigger movers back and forth when the user squeezes it in to operate the device and when he lets go a spring would make it come back out. The trigger is designed to be used with two fingers as it gives the user more control. There are finger grooves cut out to make it more comfortable to clasp



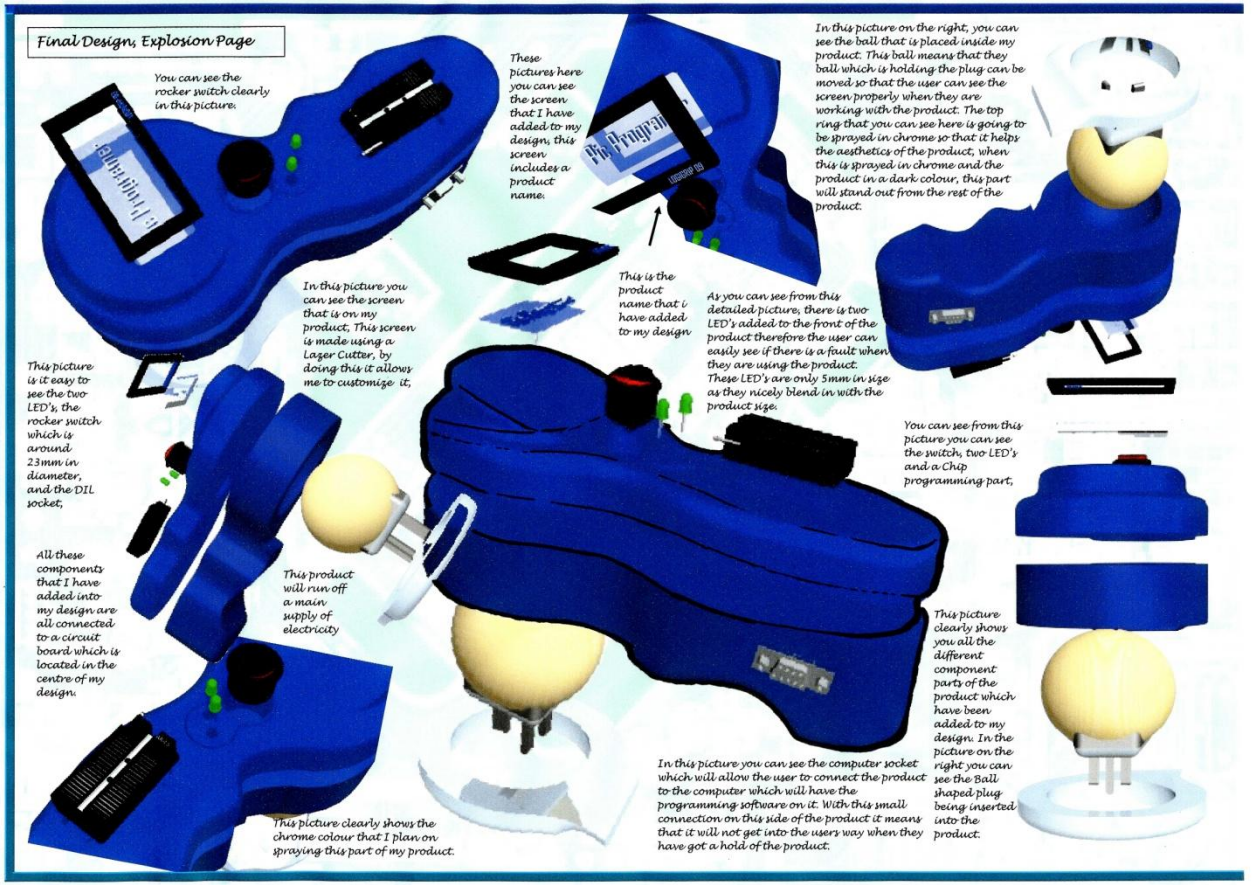
The design will have a stand so that it can be placed on the ground to be used by the person creating the speeding object on their own or that it could be used for displaying to a large crowd without the need for someone to hold it all the time. The stand could also be used to stabilise the gun by leaning it on a surface for someone who may have shaky hands. The stand it just like a kickstand for a bike. The stand build into the gun would eliminate the need for a tripod which can be costly and annoying to carry. The gun is very small and compact so that it can be carried around and it is very lightweight so it is easy to carry and hold without putting strain on the wrist or arm.

The device can be connected to a screen for displaying the speed to a crowd, as shown above

The photograph on the right shows the bottom of the handle. There will be a place for two AA batteries to be slotted into so that the gun can be used anywhere with ease. The bottom bit will just simple slide off to reveal the space for two batteries. The image below shows the side of the product. These lights indicate the battery level as it very hard to tell how much battery is left. This tells the user how much is left so the user knows when to replace the batteries. This also is very stylish and attractive and adds a bit more colour to the device

The details are not the details. They make the design.

Charles Eames



Manufacture

- High (29-40)
- Produce a high quality outcome in an appropriate range of materials.
- Demonstrate clear competence in a range of production skills and processes.
- Record in detail any changes in design developments brought about during manufacture

Manufacture

- Medium (13-28)
- Produce a good quality outcome in an appropriate range of materials.
- Demonstrate reasonable competence in a range of production skills and processes.
- Record changes in design developments brought about during manufacture.

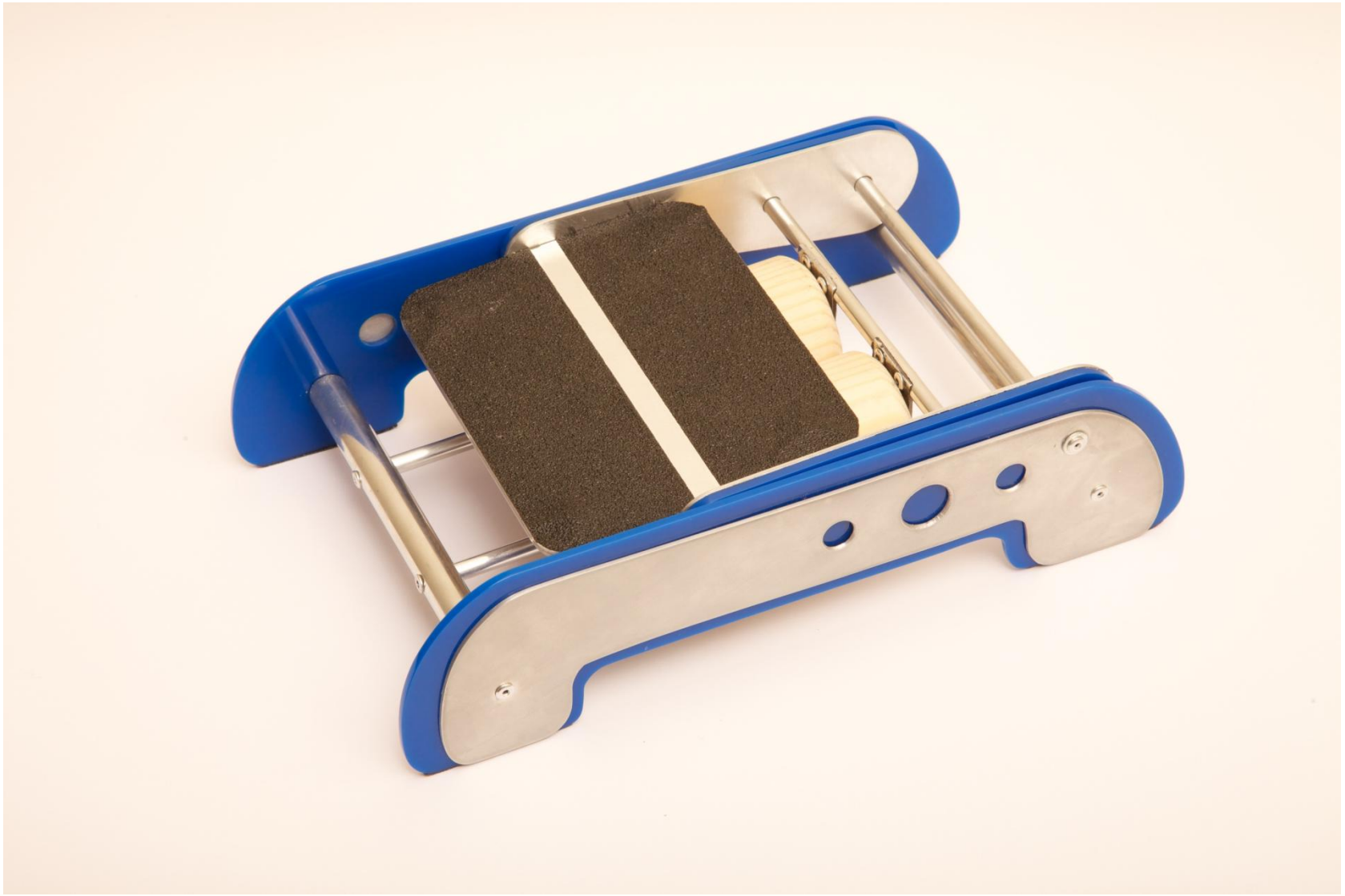
Manufacture

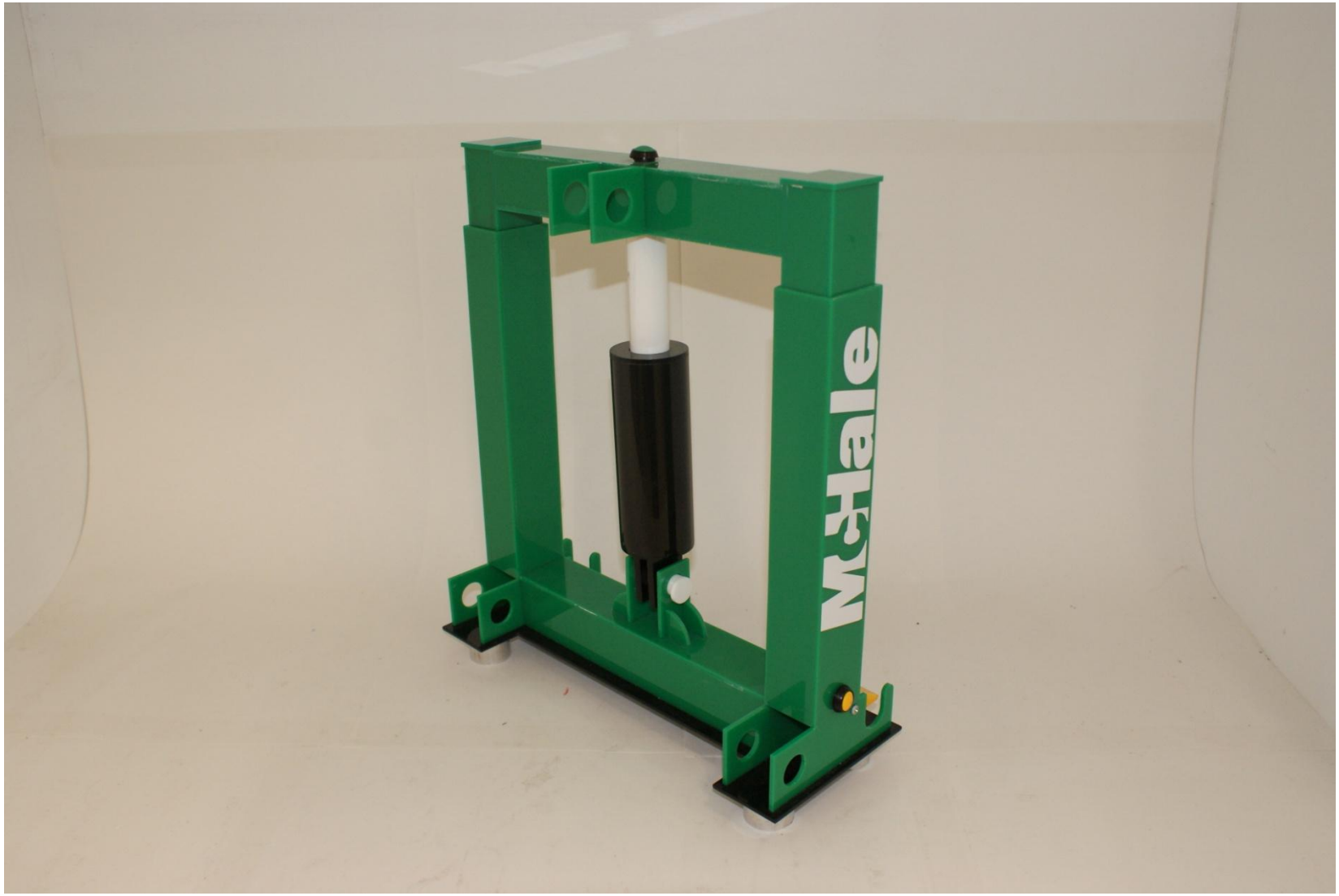
- Low (1-12)
- Produce a low quality outcome and limited use of materials.
- Demonstrate poor competence in a range of production skills and processes.
- Limited detail of changes brought about during manufacture

Zero should be awarded for a response which is not worthy of any credit.


DRAPER


APER




McHale

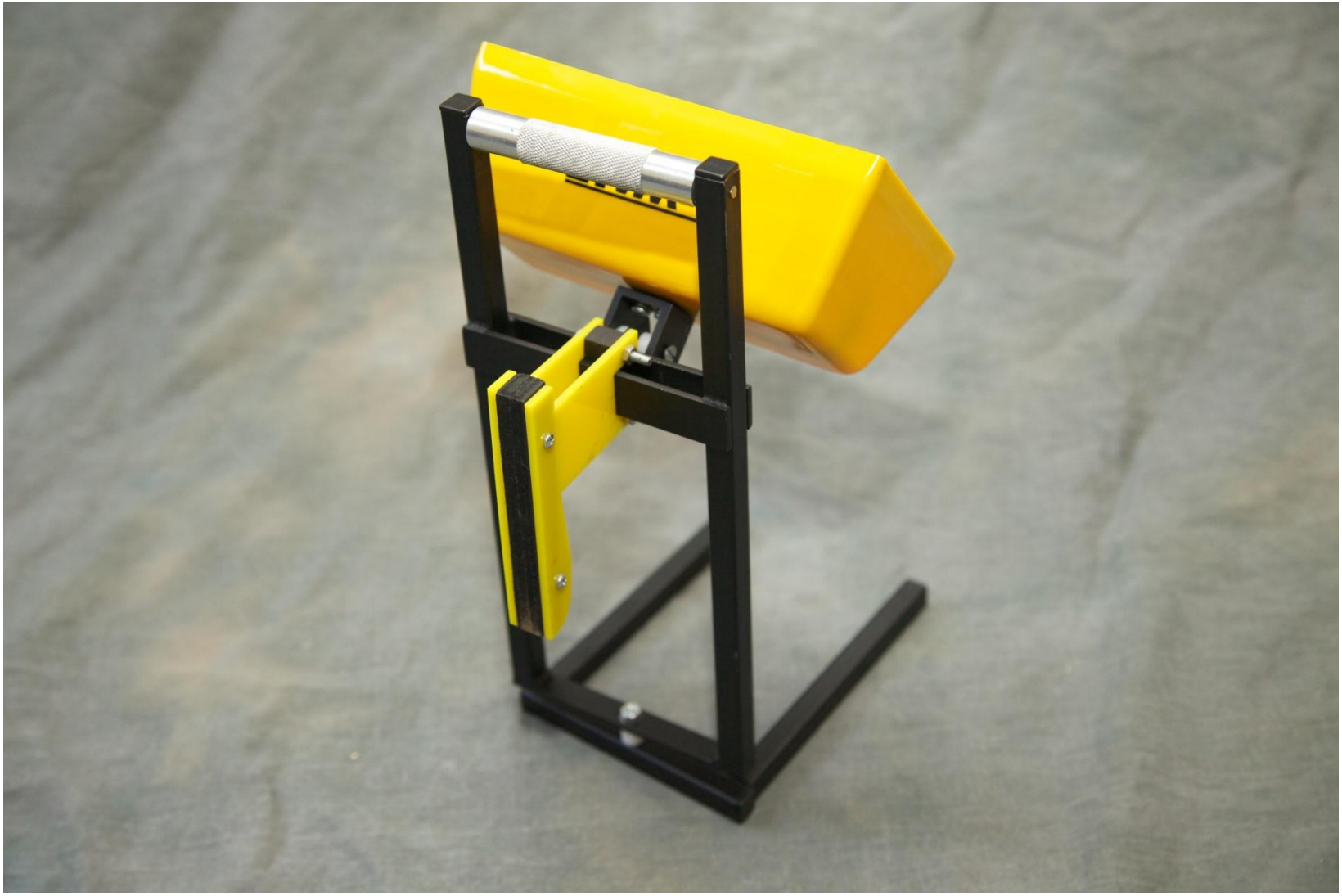

Lutton
Lutton Medical

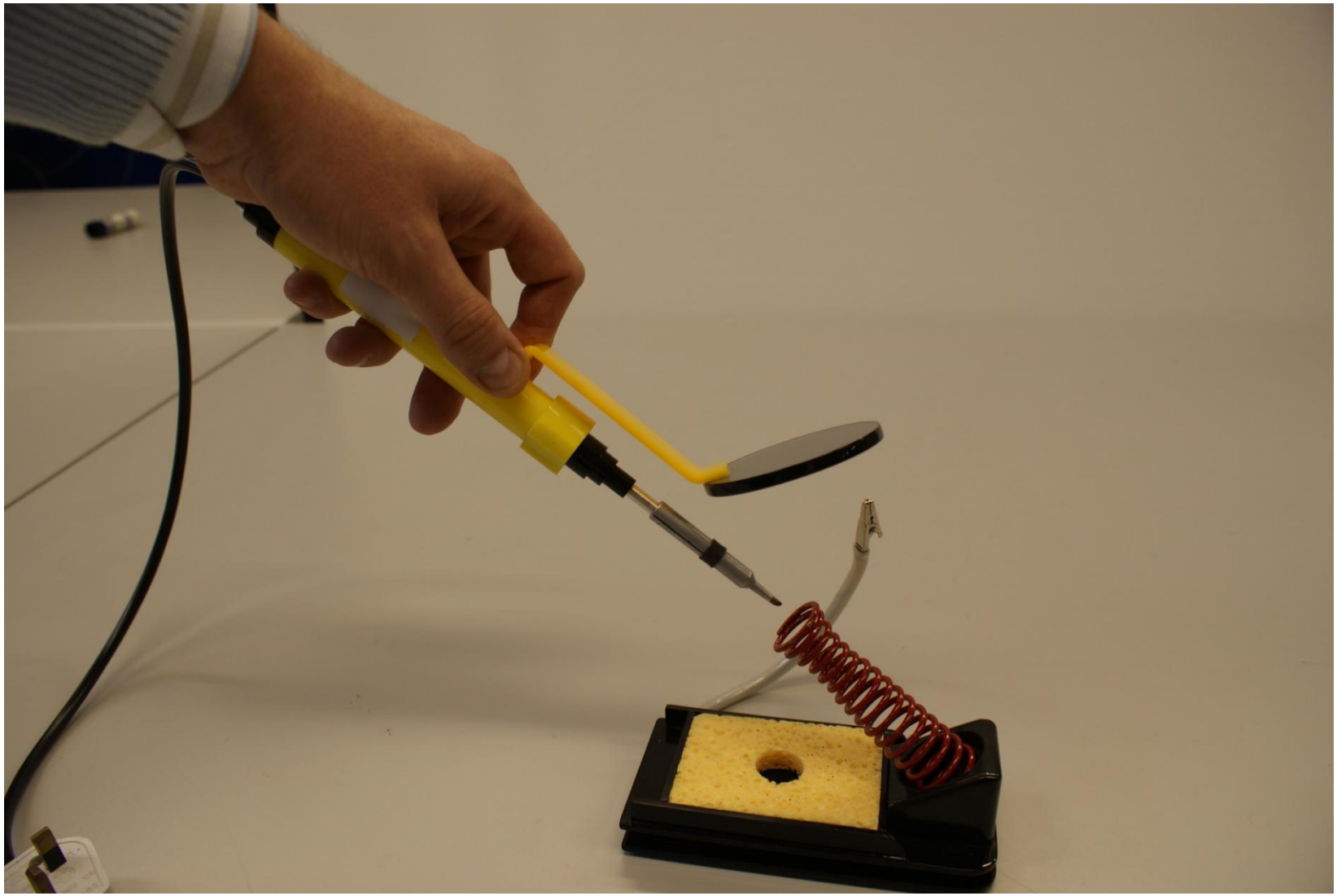

BATTERY = 03%
98.8F
ON/OFF SAMPLE
Lutton Medical
Lutton


DRAPER
THE TOOL COMPANY


DRAPER
THE TOOL COMPANY


HOZELOCK
HOZELOCK






HOT
A Henry

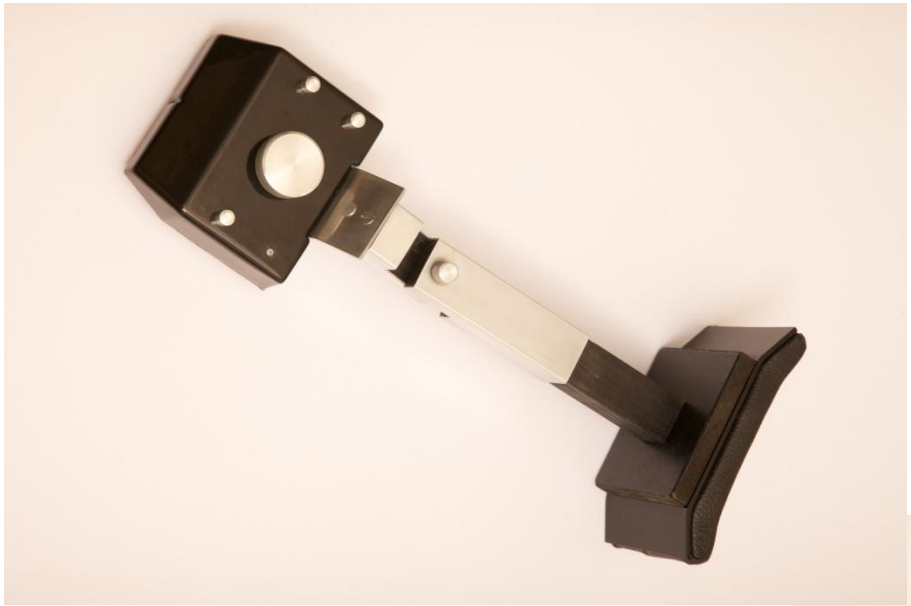

A Henry
HOT


STANLEY


12 in
304.8 mm
30.48 cm
0.348 m
1 ft
Lappin Lengths


STREETWISE


Fender




CARRIER 58 - 602264 - DP -

Testing and Evaluation

High (7-10)

- Produce a high level critical and objective evaluation of outcome.
- Carry out and present an extensive range of detailed testing, showing meaningful conclusions.
- Make high level proposals for further development as an outcome of testing.

Testing and Evaluation

- Medium (4-6)
- Produce a satisfactory evaluation of the outcome which is mainly objective.
- Carry out and present some outcomes of tests, which show mostly meaningful conclusions.
- Make appropriate proposal for further development.

Testing and Evaluation

- Low (1-3)
- Produce a limited evaluation of the outcome.
- Show limited evidence of meaningful testing with only simplistic conclusions.
- Demonstrate limited awareness of possibilities for further development.

Testing

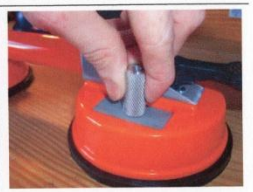
This is my final product. In this section, I will be testing and evaluating my finished product. I will test the product against my original re-design specification to ensure that my product performs as expected.

Handle:

This is very important part of my project as it is what the user will hold during operation of the product. In my specification, I stated that the handle must be comfortable to hold and also have a hand grip to make carrying heavy loads easier. After testing the product, I have found that with the addition of grooves, the handle is very comfortable to hold, in all positions as shown in the pictures. The only problem with this handle design is that each of the grooves, of which there are four, will not necessarily accommodate the natural position of the hand.

Window Packer Storage:

In my specification I stated that the product must include storage for window packers. The final product includes space for two window packers and also includes a pin and thumb screw to help secure the packers. When stored, the packers sit flush with the top of the suction head. The only fault with this method of securing the packers it that it that they can be quite difficult to remove. As a result, the product may need to be turned upside down to remove the packers.



Tilting Bracket:

This is the tilting bracket on my product being tested. In my specification, I stated that the suction heads must be capable of pivoting and they also must be lockable to prevent unwanted movement. The tilting bracket provides a wide range of movement as shown in the picture. The pin also allows the bracket to be "locked" in place, however, the pin will mot be able to prevent movement when large loads are lifted. This is a minor problem as the pin works perfectly with no load and it is not needed once the suction pads have been attached to the material.

Testing On Car Windscreen:

Here is the product being tested on a curved glass surface. One photo is with the product in the straight position, the other shows the product in the tilted position. As you can see, it is particularly effective when a curved glass surface needs to be lifted, as the heads adapt to the curve of the surface.

Tilted

Glue Gun

1. Investigation and Analysis Of Product | 2. Re- design Solutions and Development | 3. Manufacture | 4. Testing and Evaluation

Evaluation Against Specification

Ergonomics
- The product must be lightweight (1 kg at maximum).
- The product weighs a mere 0.56kg.
- The handle must fit comfortably in the users hand.
- The handles curvature matches that of the hand perfectly.
- The product should be balanced.
- Balance has been sacrificed somewhat for the sake of aesthetics.
  Repositioning or redesigning the handle could have overcome this problem.
- The trigger must operate with minimal effort to avoid strain on the user.
- Operation is simple and the trigger moves with ease although the trigger doesn't move smoothly.
  Care during manufacturing could have avoided any complications within the trigger mechanism.

Materials
- The chosen materials must be cheap, lightweight and be readily available.
- The chosen materials fulfilled their criteria and functioned as desired.

Maintenance
- The finishing applied must work well with each given material, and the product must need little to no maintenance.
- The finishing worked well and improved aesthetics (MDF- paint and gloss, Nylon and Acrylic- polish.)
  The product requires no maintenance.

Manufacturing
- The manufacturing must be planned so as to avoid complications.
- The manufacturing was not extensively planned but all complications were overcome.
  Careful planning could have avoided unnecessary complications.
- The manufacturing must be safe and not overly time consuming.
- Although safety precautions were made manufacturing was more time consuming than planned.

Economics
- The product must be as cost effective as possible and be capable of competing in the market in both performance and price.
- The device is inexpensive to manufacture and is valued at roughly £30/ €33.62

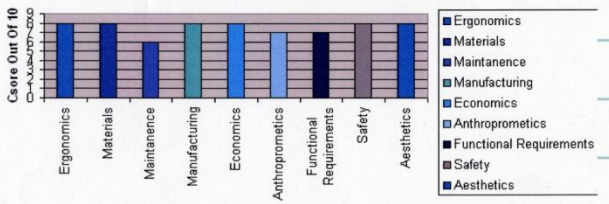
Anthropometics
- The handle must fit comfortably into the users hand.
- Both the trigger and handle are comfortable.
- Operation must be simple and all switches easy to access whilst in use.
- The switches are easily accessed whilst in use and the device is simple to use.
- The product must be lightweight and balanced.
- The product weighs a mere 0.56kg, however it is not perfectly balanced.
  Balance is a factor that should have been considered during the designing of the product.

Functional Requirements
- The product must be capable of withstanding shocks or impacts from a fall of at least 1.5m as this is the height of a normal desk.
- The device is relatively shock resistant but is vulnerable at various points; in any case it would survive a 1.5m fall with no damage.
- Operation Of all triggers and switches must be smooth and efficient.
- The trigger functions as intended but not as smoothly as desired.
- The product must fit into a stand or have a built in support mechanism.
- A stand/ Support mechanism was not included as it was thought that implementing such a mechanism would affect the aesthetics.
  As the modifications page will show this problem could have been overcome with little affect on aesthetics.

Safety
- The product must not have any sharp edges which could cause injury.
- There are no sharp edges or hazardous attributes.

Aesthetics
- The design must be original, standing out among its competitors and aesthetically attractive.
- The colour scheme must be interesting and the colours must work well together.
- The colour scheme has a professional feel and the glossy finish is aesthetically attractive.
- The product must be as compact as possible to avoid becoming large or bulky and to save money on material costs. (The handle must fit comfortably and the product mustn't exceed 0.025 cubic metres.)
- The device does not pass my limit in volume (0.025cubic metres) but it is still not as compact as desirable.
  Volume is a factor that should have been considered during the design of the product.

Evaluation



	Ergonomics	Materials	Maintenance	Manufacturing	Economics
Score Out Of 10	8	8	6	8	8

	Anthropometics	Functional Requirements	Safety	Aesthetics
Score Out Of 10	7	7	8	8

Total (Out Of 90)- **68**

76%

AS-Level Technology Coursework – Testing

Testing of Aesthetics

To the right is an image of my finished product. It shows the aesthetic qualities, which I am pleased with. The product has a smooth shape and no sharp or jagged edges. The colours are quite stylish and fit in well with any kitchen environment.

However, they are quite bland and there is not a wide range of different colours.

The knurled pins give the product a very professional quality and help improve the pizza cutter's aesthetics.

The size, shape, and proportions of the pizza cutter are shown in the images to the left.

As you can see, the handle is quite large and is slightly out of proportion to the rest of the product. However, the blade and blade cover are of suitable size and are in proportion to each other.

Testing of Materials

The image on the right shows the wide range of common materials that I have used in the production of the pizza cutter.

The handle is made from rigid polystyrene, while the blade cover is made from acrylic. Both of these materials are relatively inexpensive and are very easy to maintain. The blade and connecting rod are both made from aluminium which is slightly more expensive, but is much stronger and durable than plastic.

Over all, the choice of material works well with the product.

Testing of Ergonomics

The relation of the product to the user is shown in the two photographs to the left and to the right.

The two photos together show that the product is usable by both left and right handed people, and also shows the grip in use.

The shaped grip is very comfortable to hold and the spaces are sufficient for the user to hold the product easily.

The knurled thumb-operated pin end allows the user to operate the blade cover movement with ease, while the knurled pin holding the blade in place allows for easy dismantling for maintenance.

Testing of Safety

The safety of the pizza cutter is one of the main areas that I wanted to improve upon. The three bottom images in this box show the fully constructed safety mechanism, while the box to the upper right shows the sliding mechanism in use.

The mechanism does work, and works well, but there is some unwanted movement when the thumb-operated pin is in use.

These images show the blade cover, as mentioned in my specification, which will provide safety from the blade. Although the cover does provide significant protection, when in use, it does not cover the entire blade.

The cover and blade are both easy to clean.

Glue Gun

Modifications

Modification 1

The primary modification that I have decide to make is to further improve ergonomics and anthropometrics. Testing showed that the product is ergonomically sound but I fear that to much emphasis has been put on comfort rather than practicality. The handle is too smooth and doesn't supply sufficient grip to the hand of the user; in a practical situation there would be a danger of damaging the device by dropping it. Therefore rubber has been added to the handle to increase grip and minimise the dangers posed by a lack of grip. Such an addition would improve grip while maintaining comfort, it will also improve aesthetics.

Modification 2

During my initial research I discovered a solution to a problem that often arises during the use of high quality glue guns. Often it is difficult to apply glue to awkward spaces and a possible solution is to give the device a long nozzle that becomes flexible under heat. This solution can be seen in many of my concept sketches but in the end this solution was not implemented. This was not implemented because the materials required are expensive and the nozzle can be prone to blockage. However I believe that this solution would give my product a major advantage over its competitors and that is why I decided to implement it.

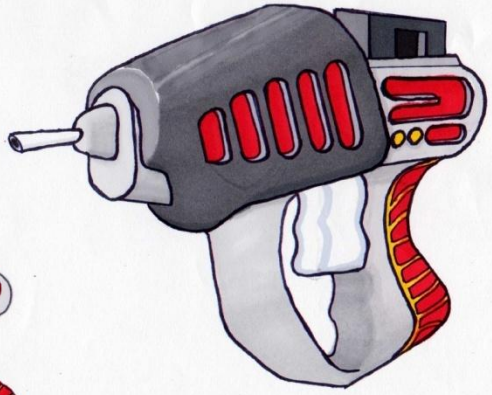
Modification 3

One of the main design flaws with the project is that it is unable to sit upright. It is possible that by redesigning the trigger guard it may also function as a stand. This will have no negative affects on aesthetics or on ergonomics but will allow the user to set the device down in such a way as it will be easy to pick up. The stand will angle the device so that the handle is easily accessible from a standing position. This minor modification will have a major impact on the practicality of the device.

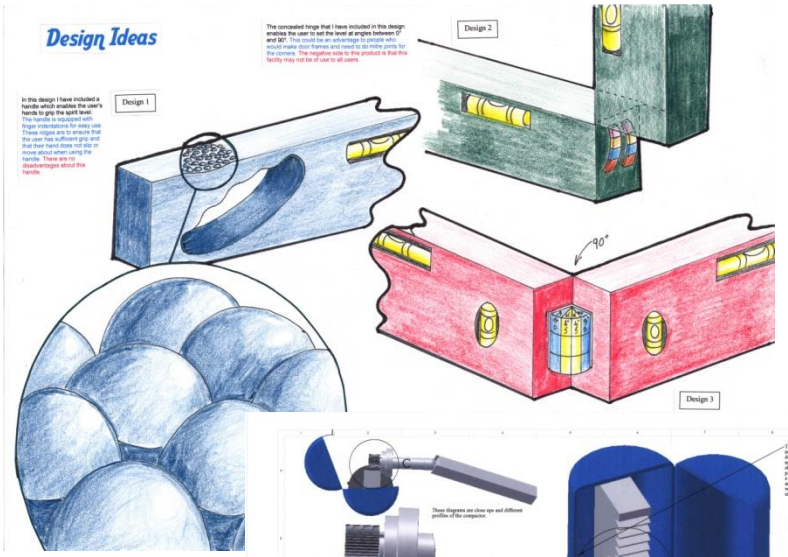
Resting edge

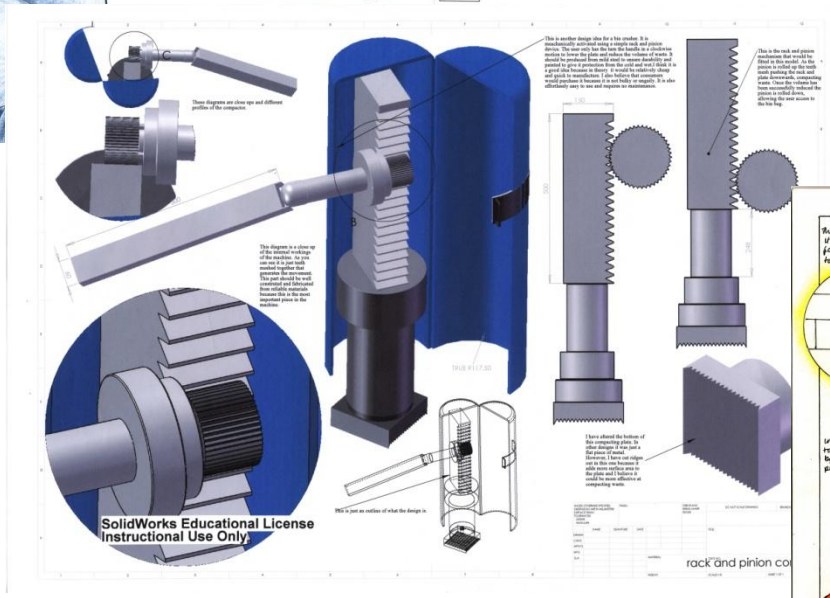
Before modifications

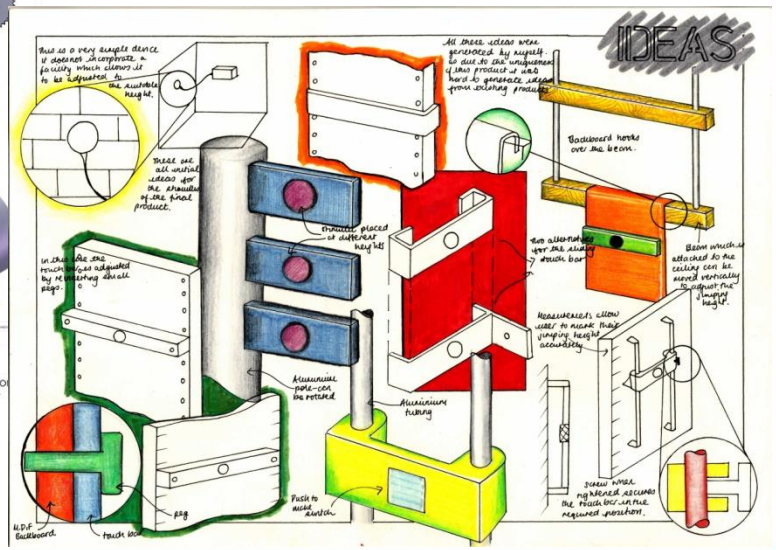
After Modifications



Modified Design







AS Technology Agreement Trial

24th Oct 2012

Rewarding Learning

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