THE NEA
(NON-EXAMINATION ASSESSMENT)

This mobile revision pdf is based on detailed work found in the 'NEA' section.
Tap on the green link button below to go to the website.

Tap the blue button to view all work covered by this APP

THE NEA
(NON-EXAMINATION ASSESSMENT)

1. INTRODUCTION TO THE NEA

2. WHAT IS ITERATIVE DESIGN?

3. USEFUL AID FOR PUPILS – THE ITERATIVE DESIGN CYCLES

THE NEA

THE NEA – CYCLE ONE

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INTRODUCTION TO THE NEA

The NEA is a single task that contributes 50% of all marks for the Design and Technology GCSE.

You will be given a choice of a number of Contextual Challenges (themes). You will research and investigate one or more of these themes, in order to find a design problem to solve.

As a designer, you will consider the design problem, from the point of view of a potential client / customer, leading to a design brief and specification. You will produce a series of designs and develop one or more, leading to a final manufactured prototype. This will be fully tested and evaluated.

Ask your teacher for guidance, regarding the number of design sheets you need to hand in, as this varies between examination boards.

Spend between 30 to 35 hours on the NEA, which includes the manufacture of the final prototype.

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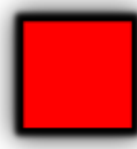

CAN YOUR TEACHER HELP YOU?

Your teacher cannot give you direct help or personalised feedback. This includes correcting your work and giving specific sample answers. Your teacher cannot tell you how to improve your work, in order to achieve better marks. However, teachers can give generic feedback (general advice). This could include the following:

Advice on the resources that could be used.

If a student has missed out an important section, the teacher can draw this to the student's attention.

Teachers can explain key words and phrases, that students may not be sure about.

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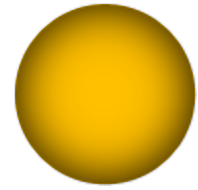
WHERE CAN I FIND GENERAL HELP?

You can use technologystudent.com for general help, with your NEA and all examination work / revision. This website is free to use (including the mobile apps) and is available 24 hours, everyday of the year.

CLICK ON THE LINK BUTTONS BELOW, TO GO TO THE IMPORTANT SECTIONS.

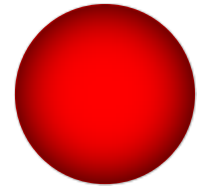
THE NEA SECTION

THE MOBILE APP SECTION



THE DESIGNER SECTION

THE REVISION SECTION SECTION



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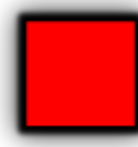

WHAT IS ITERATIVE DESIGN?

This is the process of continual improvement, of a concept, prototype, design or product. A design is improved by frequent testing, client feedback, focus groups, materials testing, prototype testing, design development and evaluation, until a final refined / developed design/product is reached. It is a CYCLICAL approach to the development of a product. There are four 'cycles' of development

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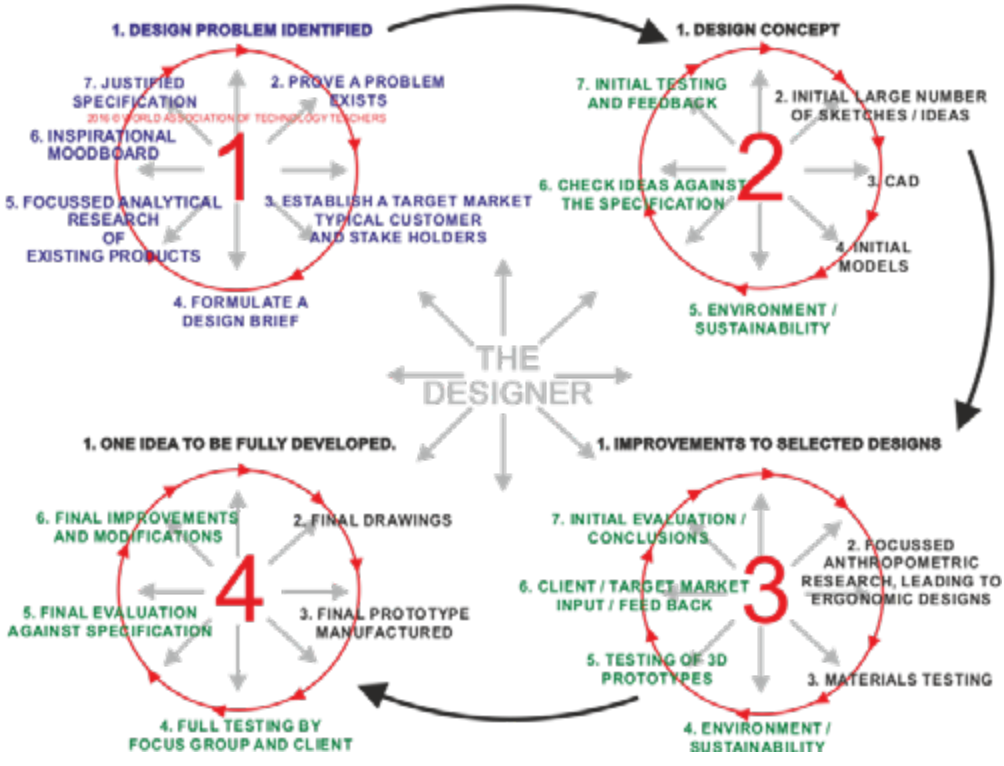

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WHAT IS ITERATIVE DESIGN?

Iterative Design works at it's best, when a student understands how to use 'DESIGN TOOLS', in the development of a product. Below are **some** 'design tools'.

SKETCHING, CAD, 3D DESIGN, MODEL MAKING, QUESTIONNAIRES / SURVEYS, USING PHOTOGRAPHIC / VIDEO EVIDENCE, RECORDING FEEDBACK, USING FEEDBACK, PRODUCING WORKING DRAWINGS, CRITICAL ANALYSIS, MATERIALS TESTING, PRODUCT TESTING, RELEVANT, RESEARCH SKILLS, EVALUATIVE SKILLS, MARKETING, CUSTOMER PROFILING, WRITING A PROBLEM AND BRIEF, WRITING A SPECIFICATION, COMPOSING AN INSPIRATIONAL, MOODBOARD, PLANNING SKILLS, MATERIAL SELECTION, COLLECTING ANTHROPOMETRIC DATA LEADING TO AN ERGONOMIC DESIGN, HEALTH AND SAFETY, MANUFACTURING PROCESSES

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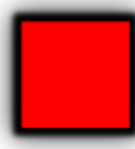


USING DESIGN TOOLS?

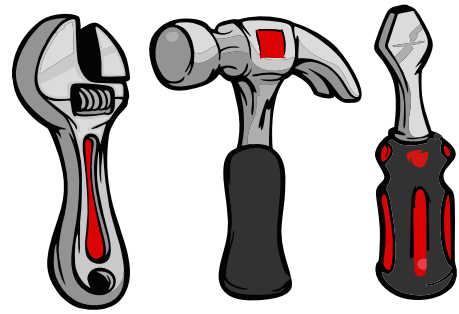
Example 1: If you understand the purpose of a questionnaire / survey, you will be able to decide when to use this tool during designing (and how many times). This applies to each 'design tool', including CAD, thumbnail sketching, model making etc…..

Each design tool can be utilised many times, during the iterative design process.

Example 2: 'Feedback'. If you know how to record feedback, what to ask potential customers and stakeholders and how to turn the gained knowledge into an improved design, this skill can be used regularly.

There is no set way of designing. You have the freedom to use the 'design tools', at any time, whilst solving your design problem.

Tap the image below for detail - design tools.



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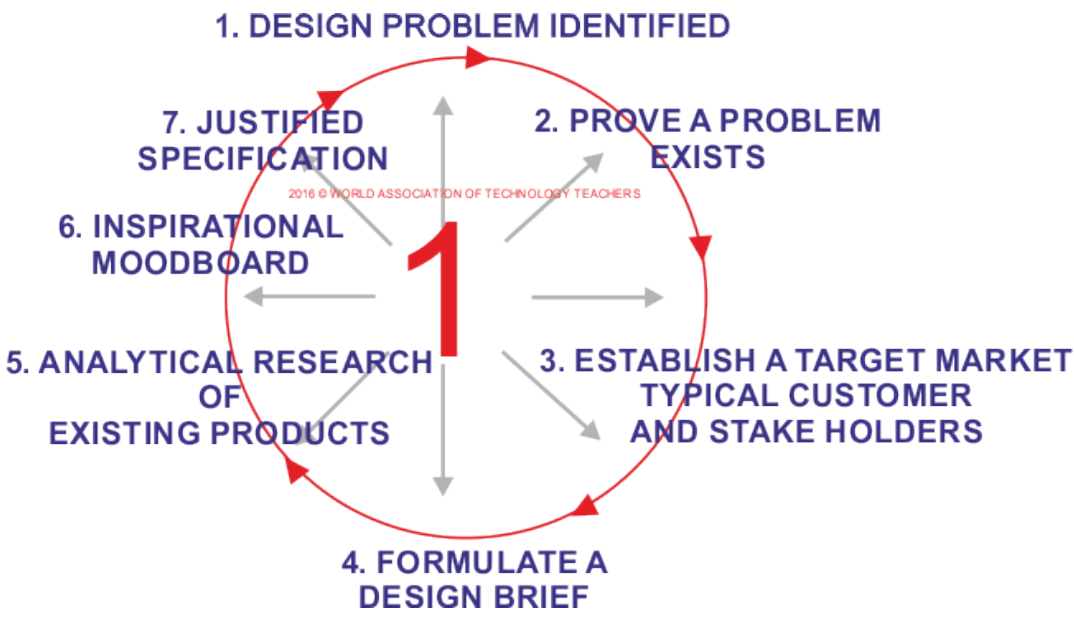
THE NEA – CYCLE ONE
DESIGN PROBLEM TO SPECIFICATION

Cycle One is outlined below. The following slides will take you through each stage / aspect.

Tap the image below for detail / samples

= EXPLORE = CREATE = EVALUATE



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1. DESIGN PROBLEM IDENTIFIED

Begin by investigating the selected CONTEXTUAL CHALLENGE (supplied by the Examination Board), to identify design possibilities / design problems. Consider these in-depth. One way of going about this is seen below. **From your selected Contextual Challenge, you need to identify a design problem, for you to solve.**

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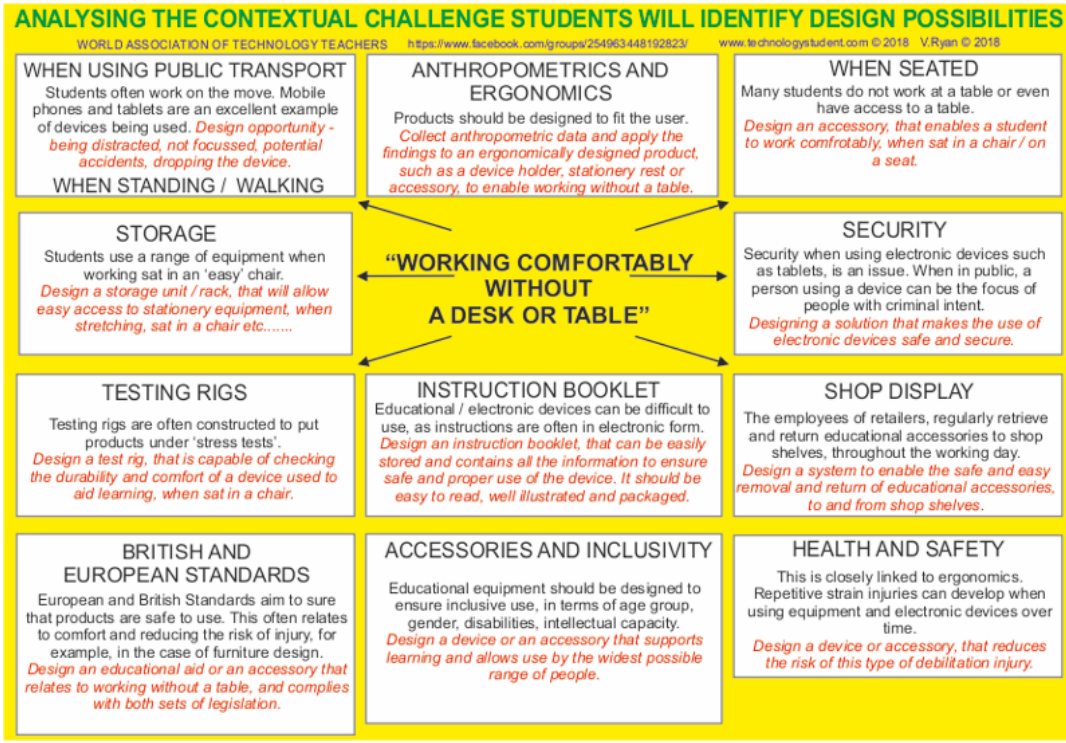

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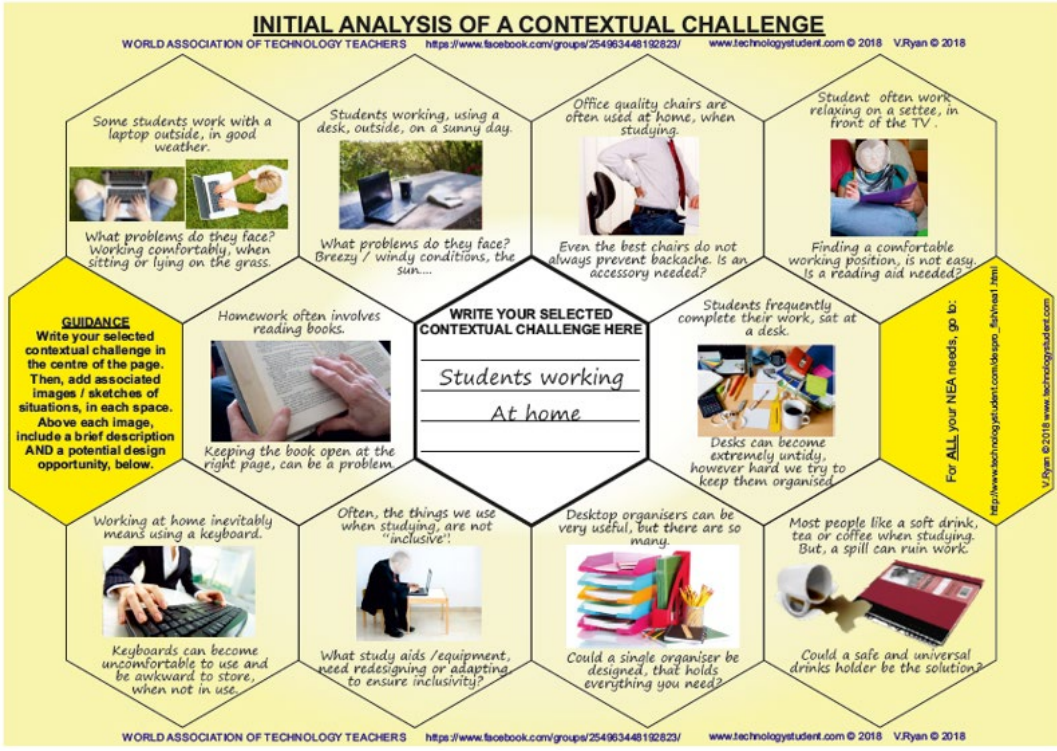
AN ALTERNATIVE LAYOUT - WORKING FROM A CONTEXTUAL CHALLENGE

This is an alternative way of analysing the Contextual Challenge. Text and images have been used.

IMPORTANT – DO NOT COPY THE LAYOUT – DEVISE YOUR OWN LAYOUT!!!

Tap the image below for more detail



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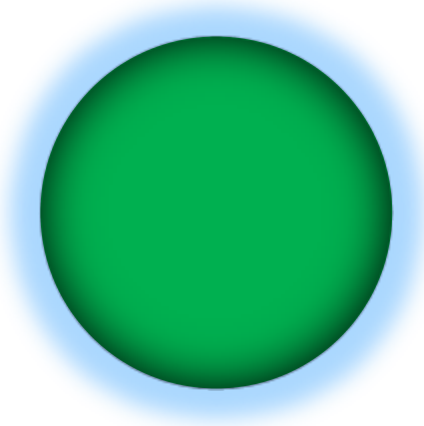
STILL HAVING PROBLEMS IDENTIFYING A PROBLEM TO SOLVE?

At its most interesting, design involves innovation and imagination. Even a simple design problem can lead to the development of an innovative product.

If you are finding it difficult to identify a problem from the Contextual Challenge, follow the link button below, to see some examples of design problems being found in everyday activities.



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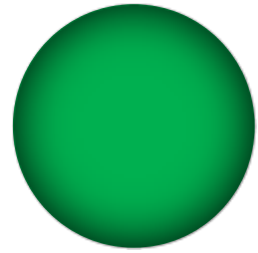
2. PROVE A PROBLEM EXISTS

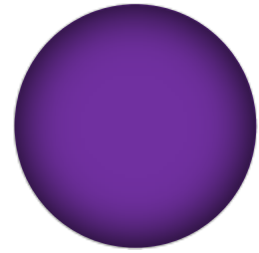
Once you have identified a 'problem' to solve, you must write a clear statement / short paragraph describing / explaining it.

Tap the link button for an example design problem.



Then, you must provide evidence that the problem is one that is worthwhile solving. This is often achieved through the use of a survey / questionnaire.

Tap the link button for an example of proof / evidence.



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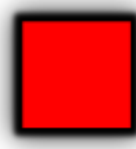
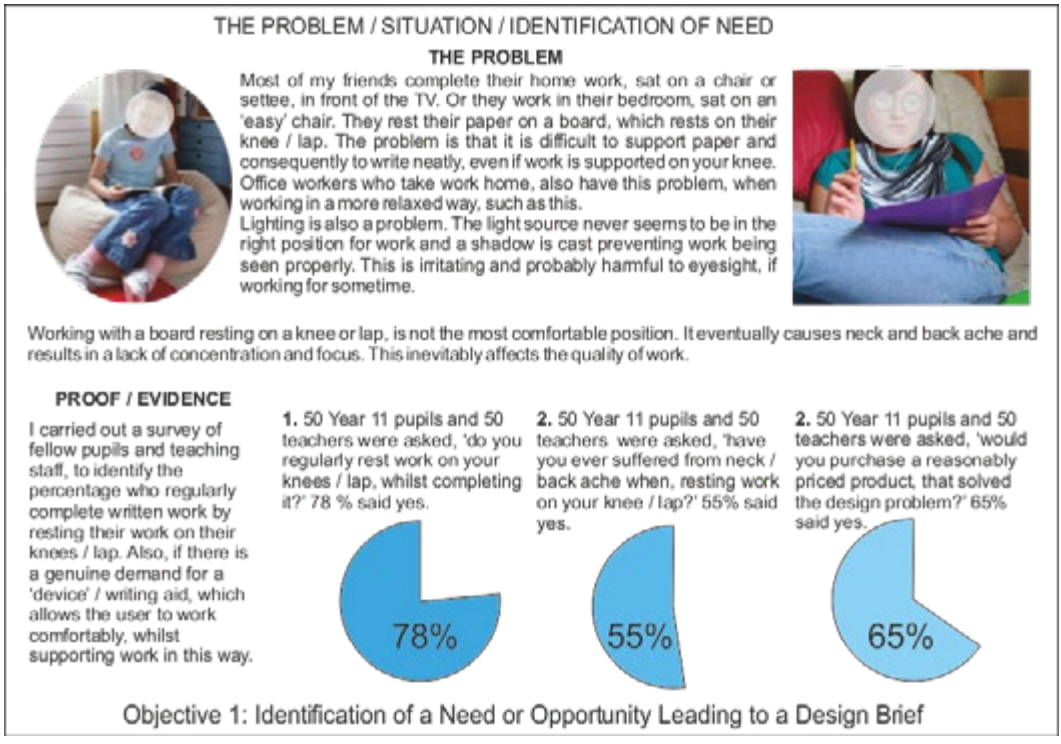


PRESENTING THE PROBLEM AND EVIDENCE

Below is a sample presentation of the 'problem' and 'evidence'. Both are presented clearly. Think carefully about how you can present your sheet. Do not copy the sample.

Tap the image for an example layout.



THE PROBLEM / SITUATION / IDENTIFICATION OF NEED

THE PROBLEM

Most of my friends complete their home work, sat on a chair or settee, in front of the TV. Or they work in their bedroom, sat on an 'easy' chair. They rest their paper on a board, which rests on their knee / lap. The problem is that it is difficult to support paper and consequently to write neatly, even if work is supported on your knee. Office workers who take work home, also have this problem, when working in a more relaxed way, such as this.
Lighting is also a problem. The light source never seems to be in the right position for work and a shadow is cast preventing work being seen properly. This is irritating and probably harmful to eyesight, if working for sometime.

Working with a board resting on a knee or lap, is not the most comfortable position. It eventually causes neck and back ache and results in a lack of concentration and focus. This inevitably affects the quality of work.

PROOF / EVIDENCE

I carried out a survey of fellow pupils and teaching staff, to identify the percentage who regularly complete written work by resting their work on their knees / lap. Also, if there is a genuine demand for a 'device' / writing aid, which allows the user to work comfortably, whilst supporting work in this way.

1. 50 Year 11 pupils and 50 teachers were asked, 'do you regularly rest work on your knees / lap, whilst completing it?' 78 % said yes.

78%

2. 50 Year 11 pupils and 50 teachers were asked, 'have you ever suffered from neck / back ache when, resting work on your knee / lap?' 55% said yes.

55%

2. 50 Year 11 pupils and 50 teachers were asked, 'would you purchase a reasonably priced product, that solved the design problem?' 65% said yes.

65%

Objective 1: Identification of a Need or Opportunity Leading to a Design Brief

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3. TYPICAL CUSTOMER / POTENTIAL USER PROFILE SHEET

It is now time to clearly identify your client and potential customers / target group.

Name the client (where possible) and write a little about their background.
E.G. *"Office manager for a local college. Needs to work at home and prefers to work sat on an easy chair, with the work supported on his lap. Also works at a desk, when at his workplace".*

Tap the image for more detail.

Jeff Smith

Tap the blue button for the next slide / page.

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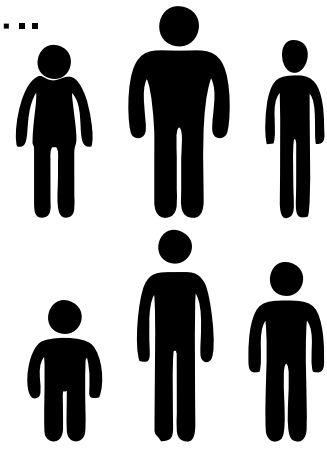
FURTHER CLIENT / CUSTOMER DETAILS TO INCLUDE

DESIGN REQUIREMENTS
Carefully describe the general requirements of the client.

CLIENTS DESIRED PRODUCT OUTCOME
After discussion with the client, describe the agreed final outcome.

POTENTIAL RANGE OF CUSTOMERS
Describe / explain the range of potential customers. For example, the final design / solution may benefit not only the client but teenagers, office workers, pupils working on homework etc…..

Tap the image for more detail.



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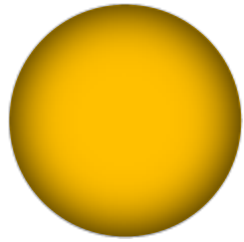
4. WRITING A DESIGN BRIEF

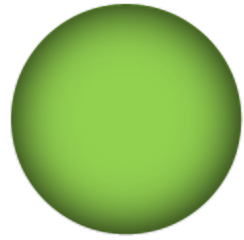
Having identified a design problem and a client / potential customers, it is time to write a Design Brief,

The 'design brief' follows the 'problem' and states clearly how you intend to solve the design problem. It is usually a simple statement or a short paragraph.

EXAMPLE DESIGN BRIEF: I am going to design a suitable 'stationery rest', for use when sat on an easy chair or settee, when sketching, writing and reading. It will have an adjustable light source, to illuminate the paperwork on the rest. It will be easy and comfortable to use . The innovative stationery rest will help prevent back and neck ache.

Tap the link buttons for help in writing a design brief





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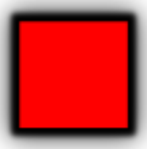
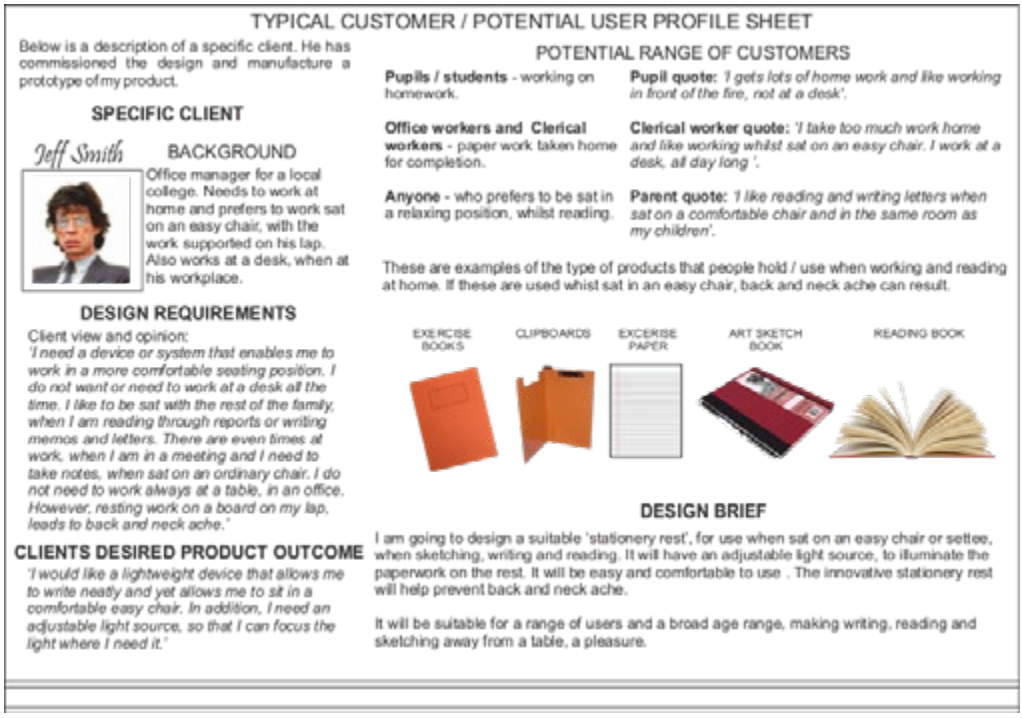


PRESENTING THE CLIENT PROFILE AND DESIGN BRIEF

The Client Profile and Design Brief should be presented clearly. An example is shown below. Do not copy the layout – produce a simple and individual layout for your work.

Tap the image for more detail.



TYPICAL CUSTOMER / POTENTIAL USER PROFILE SHEET

Below is a description of a specific client. He has commissioned the design and manufacture a prototype of my product.

SPECIFIC CLIENT

Jeff Smith

BACKGROUND

Office manager for a local college. Needs to work at home and prefers to work sat on an easy chair, with the work supported on his lap. Also works at a desk, when at his workplace.

DESIGN REQUIREMENTS

Client view and opinion:

'I need a device or system that enables me to work in a more comfortable seating position. I do not want or need to work at a desk all the time. I like to be sat with the rest of the family, when I am reading through reports or writing memos and letters. There are even times at work, when I am in a meeting and I need to take notes, when sat on an ordinary chair. I do not need to work always at a table, in an office. However, resting work on a board on my lap, leads to back and neck ache.'

CLIENTS DESIRED PRODUCT OUTCOME

'I would like a lightweight device that allows me to write neatly and yet allows me to sit in a comfortable easy chair. In addition, I need an adjustable light source, so that I can focus the light where I need it.'

POTENTIAL RANGE OF CUSTOMERS

Pupils / students - working on homework.

Pupil quote: *'I gets lots of home work and like working in front of the fire, not at a desk'.*

Office workers and Clerical workers - paper work taken home for completion.

Clerical worker quote: *'I take too much work home and like working whilst sat on an easy chair. I work at a desk, all day long '.*

Anyone - who prefers to be sat in a relaxing position, whilst reading.

Parent quote: *'I like reading and writing letters when sat on a comfortable chair and in the same room as my children'.*

These are examples of the type of products that people hold / use when working and reading at home. If these are used whist sat in an easy chair, back and neck ache can result.

EXERCISE BOOKS | CLIPBOARDS | EXCERISE PAPER | ART SKETCH BOOK | READING BOOK

DESIGN BRIEF

I am going to design a suitable 'stationery rest', for use when sat on an easy chair or settee, when sketching, writing and reading. It will have an adjustable light source, to illuminate the paperwork on the rest. It will be easy and comfortable to use . The innovative stationery rest will help prevent back and neck ache.

It will be suitable for a range of users and a broad age range, making writing, reading and sketching away from a table, a pleasure.

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5. FOCUSSED ANALYTICAL RESEARCH OF EXISTING PRODUCTS

The time has come, for you to research.

When researching existing products, it is important to focus on those that may contribute in some way, to a new or improved design. Existing or similar products, may have functions and features you find of interest or partly solve the design problem you are working on. Carefully analysing your research findings, could help you design a successful, innovative product.

If you identify an interesting function or feature, the next stage is to determine why the function / feature has been included.

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HOW TO PRESENT THE ANALYISIS OF EXISTING PRODUCTS

Tap the image for more detail.

What are the interesting features?

The interesting feature of this 'stationery rest' is that it fits firmly on to the chair and does not 'wobble' or move, when in use. It is also slightly at the side of the chair allowing comfortable use. However, one big negative is that it is for right handed people. A second left handed version would have to be bought. This is another negative.

http://www.alibaba.com/product-detail/wood-school-chair-with-writing-board_1130856362.html

What are the interesting functions?

Allows writing in a formal setting as this chair would normally be seen in a classroom.

What does the target market find interesting about the product.

My potential customers do not like the stationery rest, as it is not for an easy chair. However, in a formal setting of a classroom it is ideal.

Is the size, weight and shape important?

The product is lightweight and easy to fit and take off the chair. The shape allows the arm of the user to rest comfortably, providing a good writing position.

What materials have been used in its construction and why?

The stationery rest is manufactured from plywood. This is ideal as it does not warp or twist out of shape. It provides a firm surface for writing and sketching.

Is the cost of the product a factor in its success?

Both the chair and the stationery rest cost £18.00. This is an extremely good price and is one reason for its success.

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6. USING A MOOD BOARD FOR ANALYICTICAL RESERACH

A mood board can be extremely useful as a research tool, especially when working closely with a client / potential customer. For example, my client wants me to design a writing rest for an easy chair. When talking to him in, order to determine the overall style of the design, it is obvious that he has an interest in art movements such as; Art Deco and Bauhaus. By building up a 'reasoned' mood board on these art movements, I will be able question my client as to which style or features he would like to be applied to the writing rest. The mood board will therefore be a very useful research tool.

Tap the image for more detail about discussions with clients, leading to a moodboad

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SAMPLE - MOOD BOARD FOR ANALYICTICAL RESERACH

Your mood board should not only be composed of pictures, but also text that explains the reason for including the picture. In this example, the text will also explain which art movement features, are of interest to the client and may be applied to the design.

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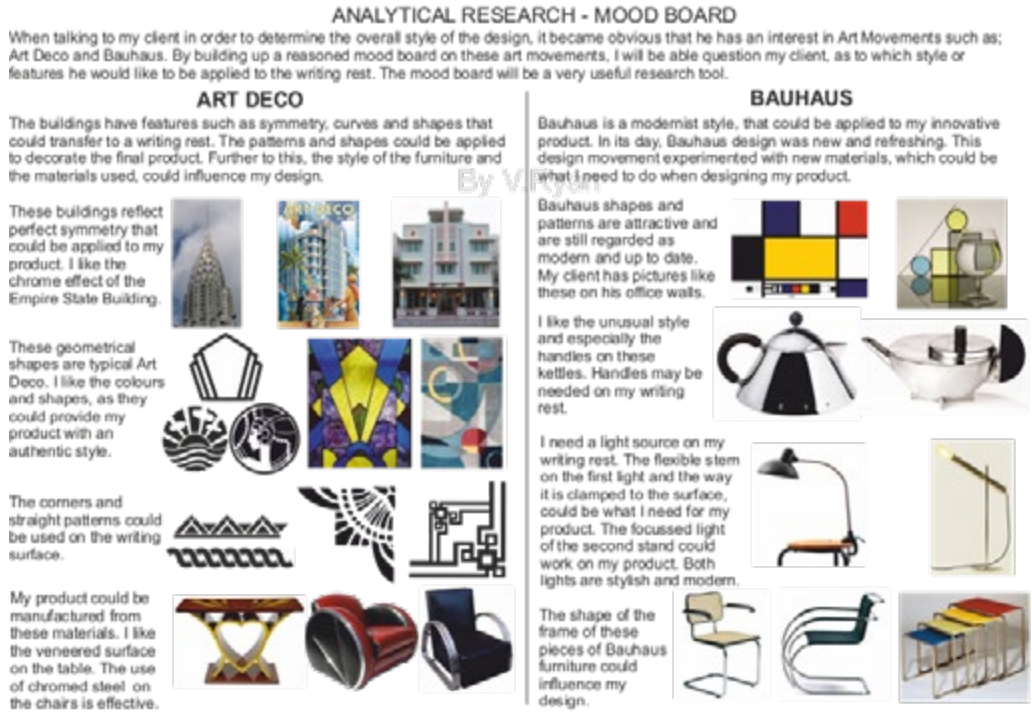

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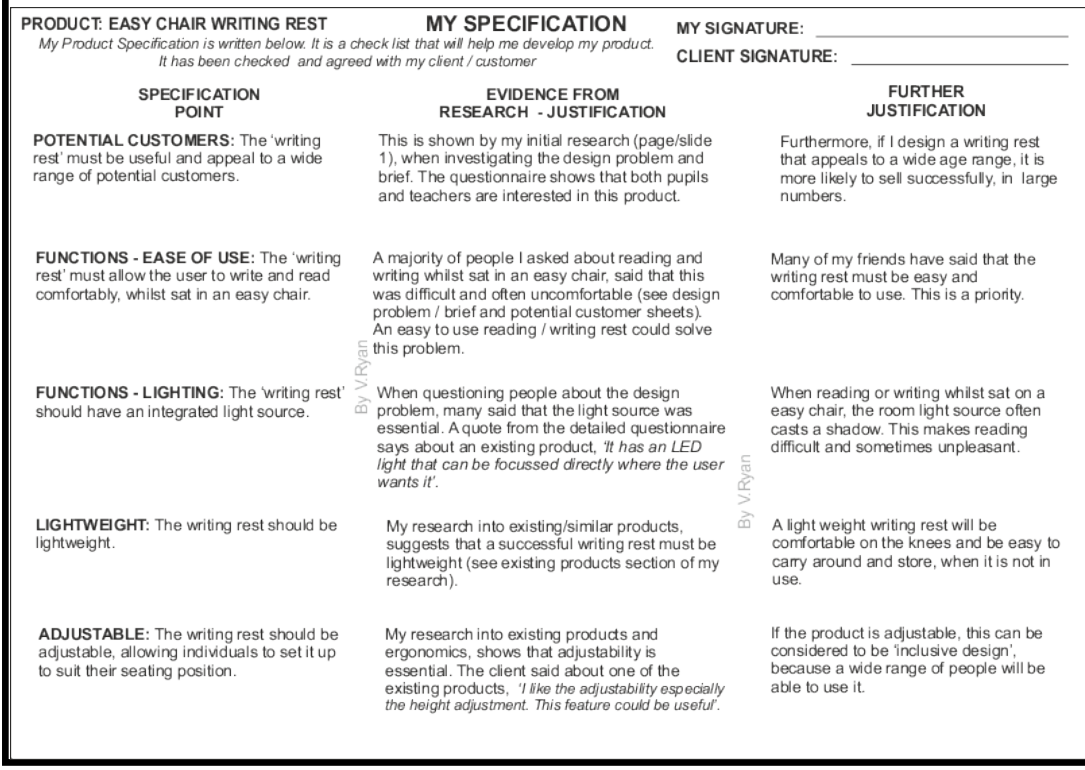
7. JUSTIFIED SPECIFCATION

A specification is an **important** summary of the key points / issues, identified by your initial research and analysis. Your research should be in detail. Now is the time to draw all the research / evidence together, in a clear specification. The specification can be a list of key points / sentences, that help to determine the final design. It may be more than one page.

Tap the image for a more detailed explanation.



PRODUCT: EASY CHAIR WRITING REST

MY SPECIFICATION

My Product Specification is written below. It is a check list that will help me develop my product. It has been checked and agreed with my client / customer

MY SIGNATURE: _____

CLIENT SIGNATURE: _____

SPECIFICATION POINT	EVIDENCE FROM RESEARCH - JUSTIFICATION	FURTHER JUSTIFICATION
POTENTIAL CUSTOMERS: The 'writing rest' must be useful and appeal to a wide range of potential customers.	This is shown by my initial research (page/slide 1), when investigating the design problem and brief. The questionnaire shows that both pupils and teachers are interested in this product.	Furthermore, if I design a writing rest that appeals to a wide age range, it is more likely to sell successfully, in large numbers.
FUNCTIONS - EASE OF USE: The 'writing rest' must allow the user to write and read comfortably, whilst sat in an easy chair.	A majority of people I asked about reading and writing whilst sat in an easy chair, said that this was difficult and often uncomfortable (see design problem / brief and potential customer sheets). An easy to use reading / writing rest could solve this problem.	Many of my friends have said that the writing rest must be easy and comfortable to use. This is a priority.
FUNCTIONS - LIGHTING: The 'writing rest' should have an integrated light source.	When questioning people about the design problem, many said that the light source was essential. A quote from the detailed questionnaire says about an existing product, *'It has an LED light that can be focussed directly where the user wants it'.*	When reading or writing whilst sat on a easy chair, the room light source often casts a shadow. This makes reading difficult and sometimes unpleasant.
LIGHTWEIGHT: The writing rest should be lightweight.	My research into existing/similar products, suggests that a successful writing rest must be lightweight (see existing products section of my research).	A light weight writing rest will be comfortable on the knees and be easy to carry around and store, when it is not in use.
ADJUSTABLE: The writing rest should be adjustable, allowing individuals to set it up to suit their seating position.	My research into existing products and ergonomics, shows that adjustability is essential. The client said about one of the existing products, *'I like the adjustability especially the height adjustment. This feature could be useful'.*	If the product is adjustable, this can be considered to be 'inclusive design', because a wide range of people will be able to use it.

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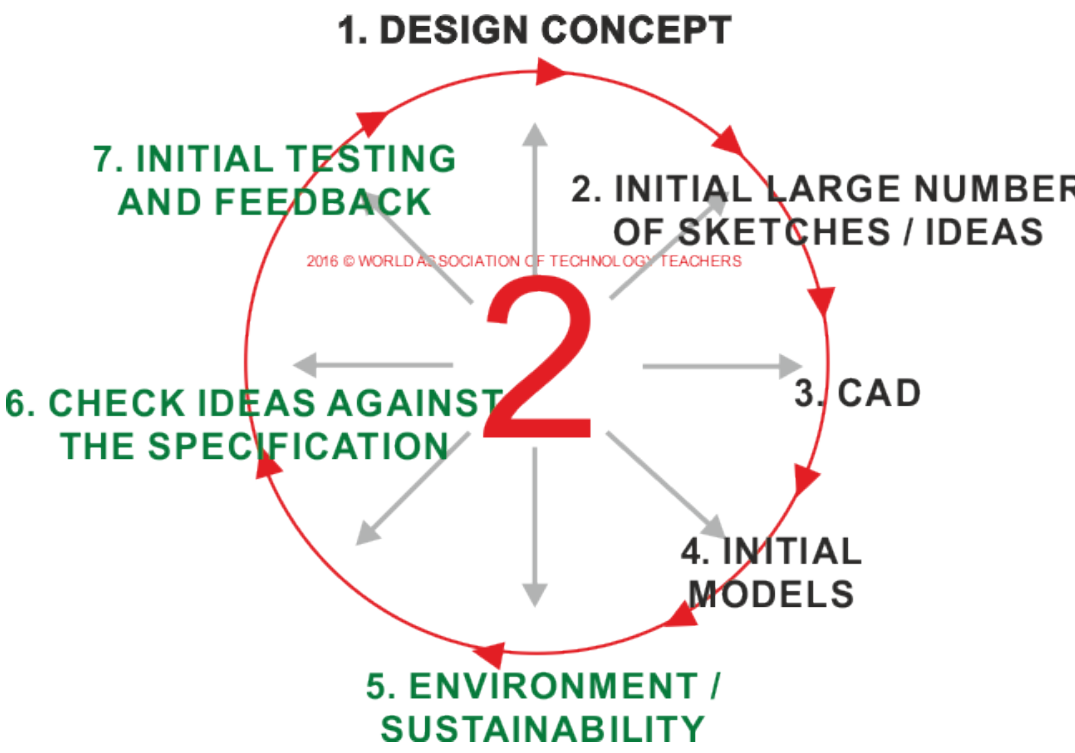
THE NEA – CYCLE TWO
FROM DESIGN CONCEPT TO INITIAL TESTING

Cycle Two is outlined below. The following slides will take you through each stage / aspect.

Tap the image for a more detailed explanation.

= EXPLORE = CREATE = EVALUATE



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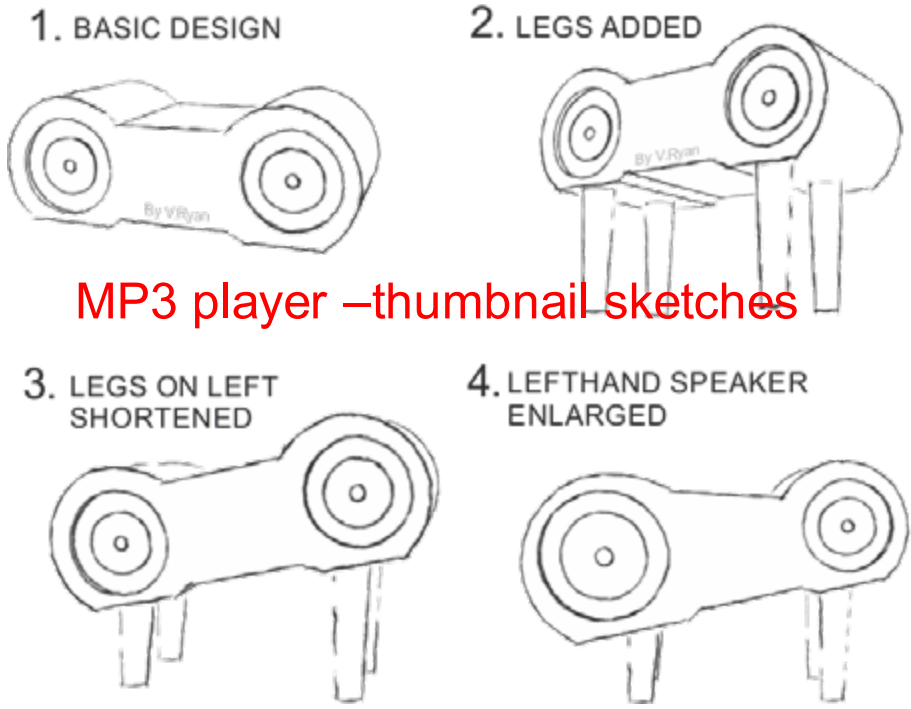
1. DESIGN CONCEPT and 2. INITIAL LARGE NUMBER OF SKETCHES / IDEAS

The design concept is slowly teased from the design brief, using a wide range of initial sketches, with limited notes. **Thumbnail sketches**, allow the designer to be creative without worrying about detail. Creativity can 'flow' and ideas are put down on paper quickly.

Tap the image for a more detailed explanation.



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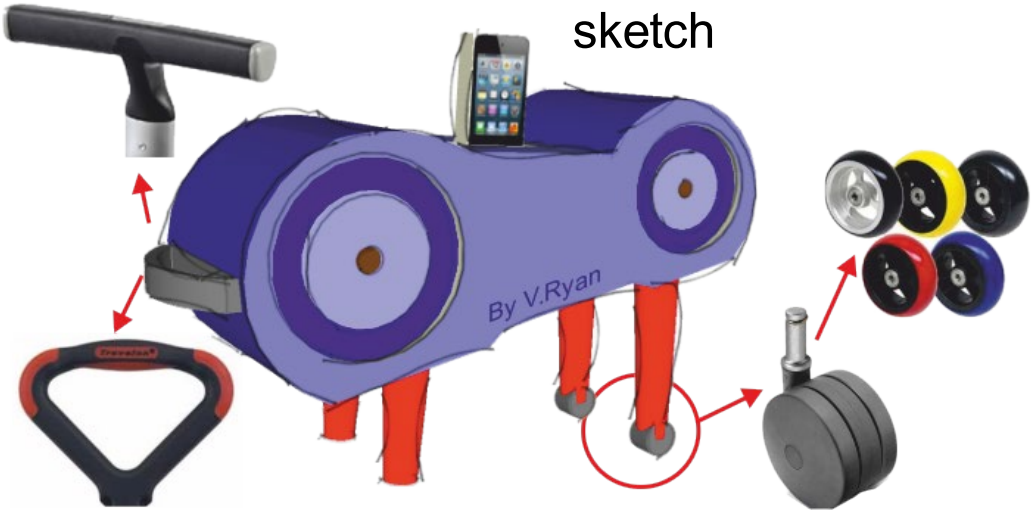
THUMBNAIL SKETCHES USED TO DEVELOP AN IDEA

This more detailed thumbnail sketch, has been enhanced by adding colour/ shade. Further to this, detail has been included through the use of images, collected from the internet. This is a quick and time saving way of adding detail to a simple sketch. Do not forget to add notes to each sketch (this is often necessary).

Tap the image for a more detailed explanation.

MP3 player – enhanced thumbnail sketch



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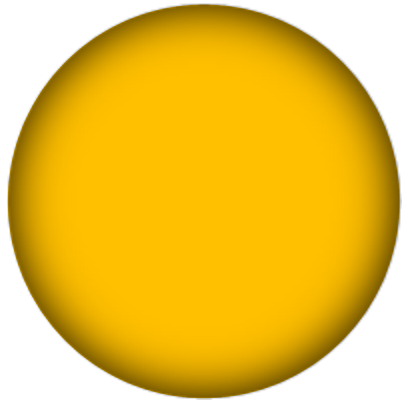
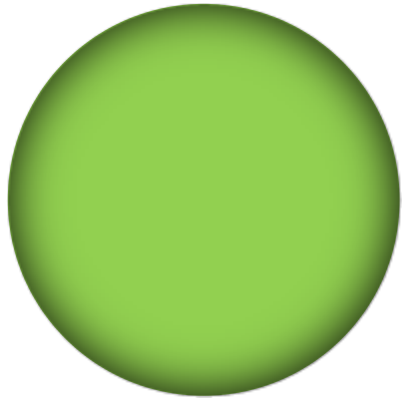
LINKS TO EXAMPLE PAGES INCLUDING SKETCHES

Tap on the link buttons to go to example design sheets including sketches and a detailed explanation of the layout.





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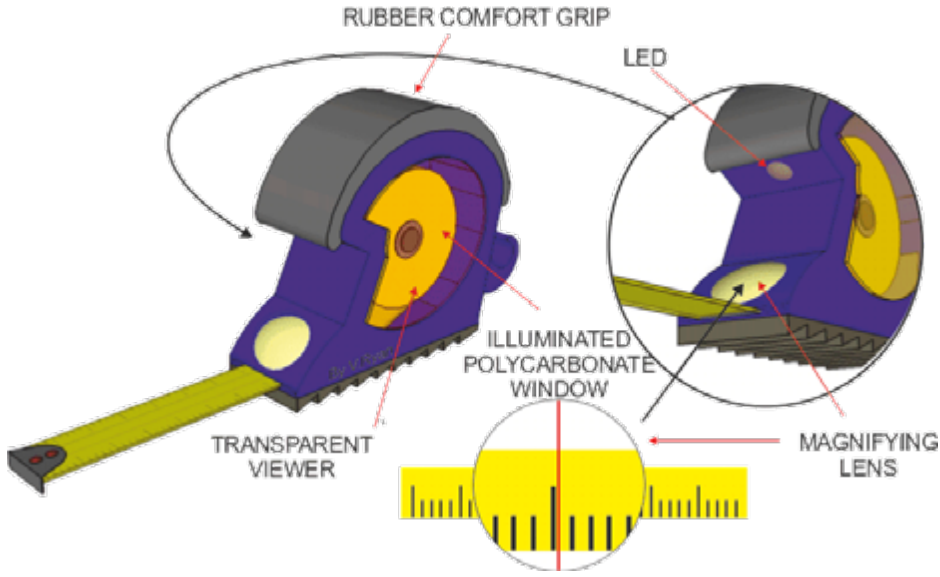
3. CAD (Computer Aided Design)

Select some of your ideas, after consultation with designers, stakeholders and potential customers and draw them using CAD. This will allow you to rotate, zoom in etc... and begin to refine your designs. Export a variety of views to your design folder / PowerPoint, adding more detailed notes to explain your ideas. Be prepared at any point to return to sketching and the seek feedback from others (see point 7).

Tap the image for a more detailed explanation.



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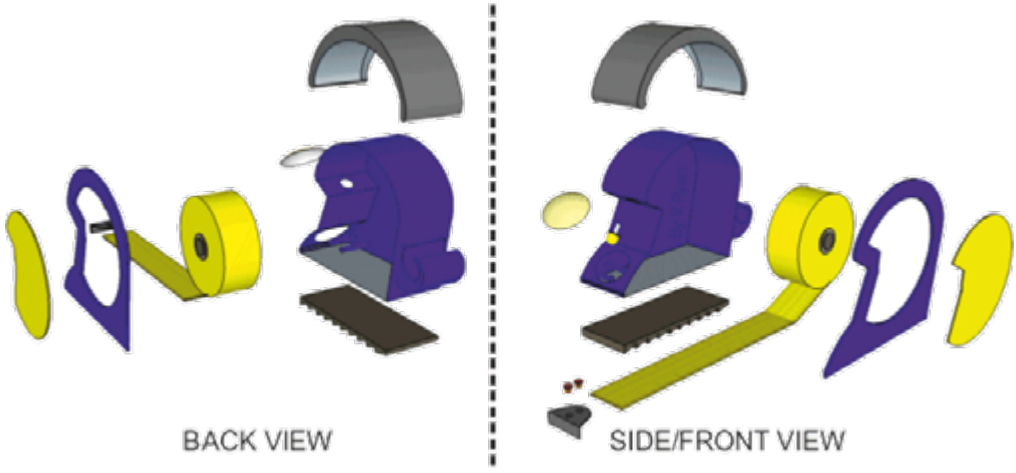
CAD - CONTINUED

More detailed designs have been produced using CAD. This allowed the focussed group to view a detailed model. In client and focus group meetings, the design can be rotated, disassembled. It can be projected onto a large screen, enabling all to see the design close up. Colour schemes can be tried out, applying colours immediately to the model. This allows immediate feedback from the focussed group. With CAD it is possible to zoom in, to see minute detail.

Tap the image for a more detailed explanation.



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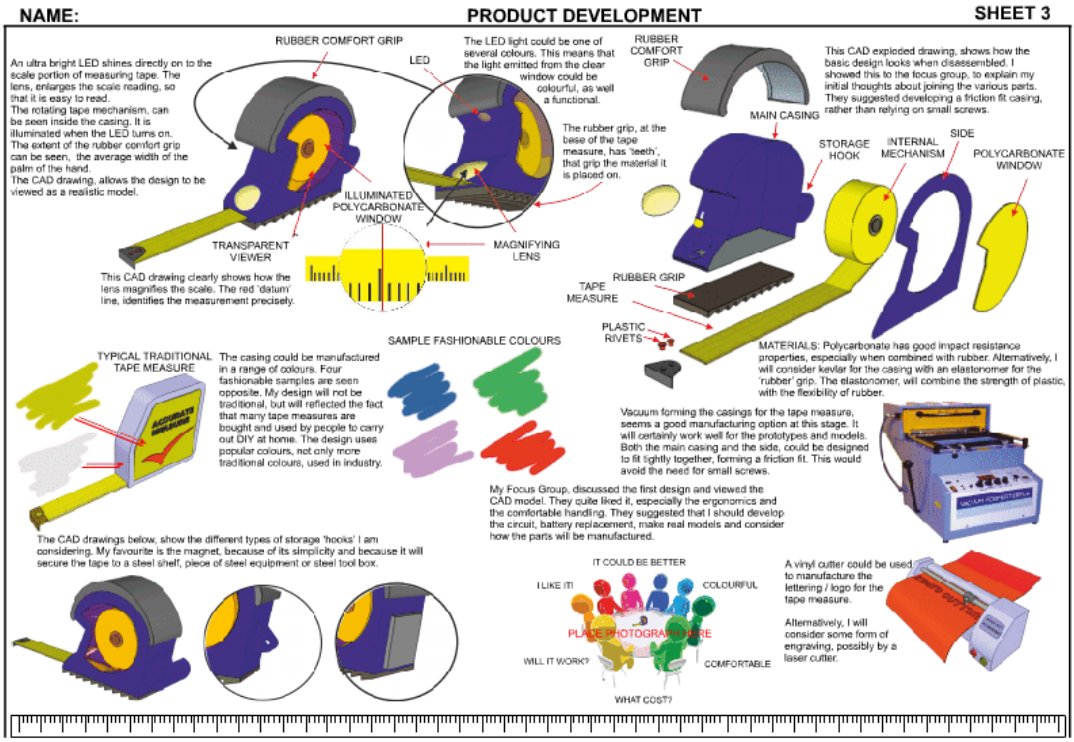
CAD - CONTINUED

Below is a sample CAD design sheet. CAD allows the design to be drawn once. Then, the it can be developed, by adding, modifying, experimenting etc… without having to redraw the design by hand, every time it is changed / updated. Progress can be swift.

Tap the image for a more detailed explanation.



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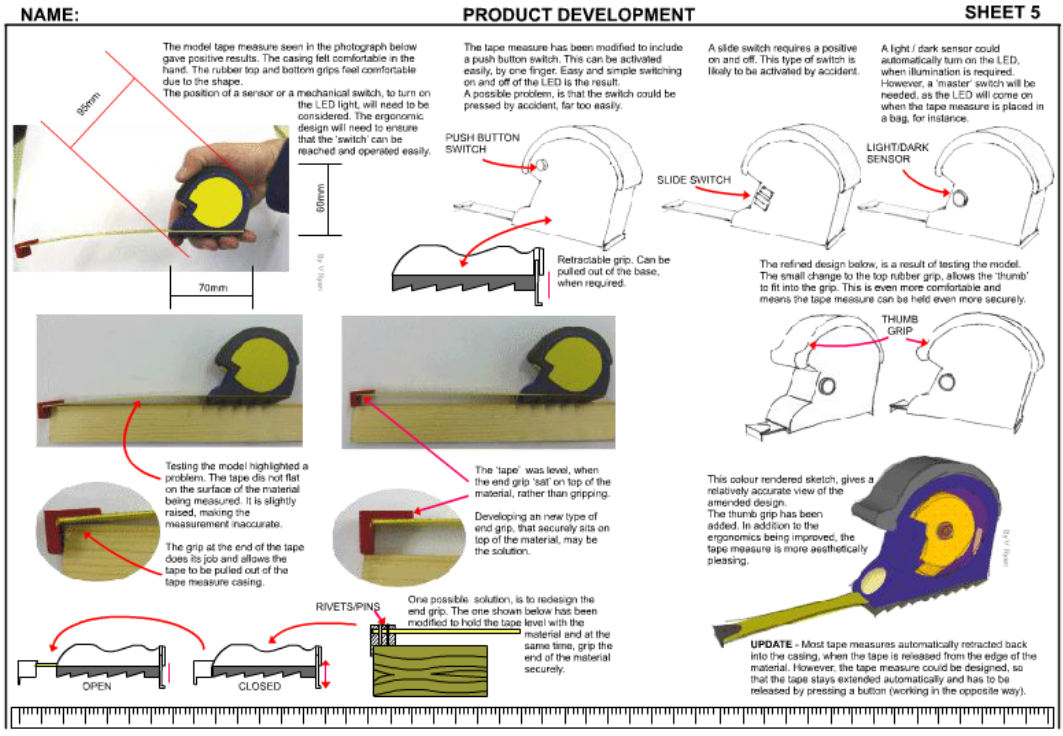
4. INITIAL MODELS

Make models to help you visual your ideas, to test them out, to check the ergonomics, to show to potential customers. Take a photographic record of your models for your design folder.

This design sheet shows the further development of a 'tape measure', through testing models. This shows how useful a model can be, in identifying additional design problems and working towards solutions.

Tap the image for a more detailed explanation.



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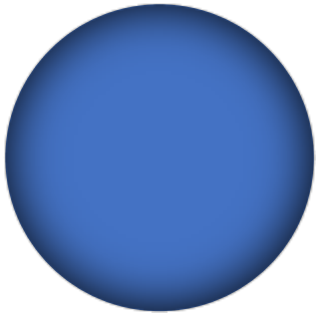
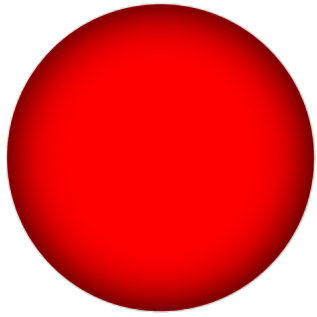
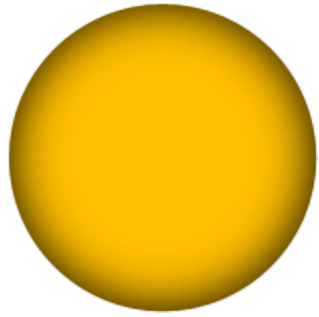
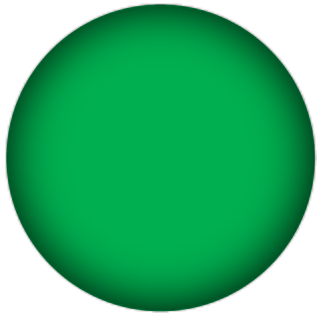
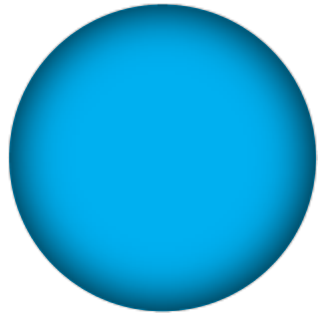
USEFUL LINKS – ABOUT MODELS

Tab on the link buttons below to go to very useful information and examples of models

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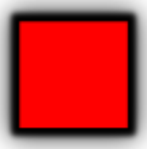
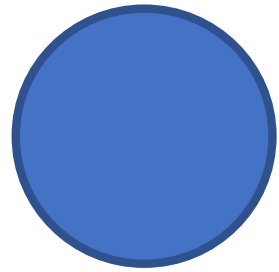


5a. ENVIRONMENT / SUSTAINABILITY

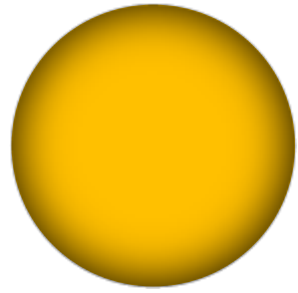
At almost every stage, include your knowledge of the environmental needs and requirements of the manufacturer, potential customer and the Law. Also, display your understanding of the 6 Rs (Reduce, Rethink, Refuse, Recycle, Reuse, Repair). Notes referring to the environment and sustainability, should appear regularly, throughout your entire design work.

Tap the link buttons for environmental issues to be referred to, on your design sheets

Mobile App covering major environmental issues



Links to website pages covering major environmental issues



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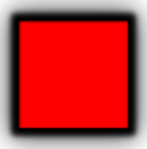


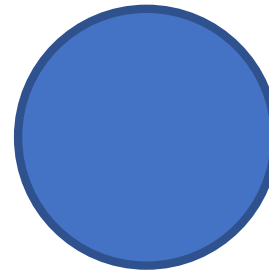
5a continued. ECONOMIC AND SOCIAL EFFECTS

In addition to the previous page / slide, it is important that you: "*display a full understanding of the impact on society including; economic and social effects*".

Essentially, what this means, is that you mention some key economic and social terms and how they effect your product. The link to a detailed App (below), will take through a vast range of issues.

Select some issues that apply to your product and discuss each one, as you work through the NEA.

Tap the link buttons for Economic and Social Effects.



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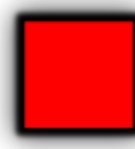

6. CHECK IDEAS AGAINST THE SPECIFICATION

REMEMBER WRITING YOUR SPECIFICATION?

Check your ideas and models against the specification you wrote in the **cycle one**. This should be a continuous process.

Carefully checking that you are keeping to the specification your agreed with your client, will ensure that you do not stray away from the design problem you are trying to solve.

It is a good idea to refer to the way your designs meet the specification, or the way they need developing, in order to meet the specification. Do this by adding notes alongside the sketches, images of models etc…..

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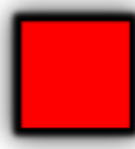


7. INITIAL TESTING AND FEEDBACK

You should be asking for feedback from your client or a focus group, at any point of the iterative design process. This should also be repeated as many times as you feel there is a need, to help in the development of your ideas / designs. There are many different forms including, surveys, questionnaires and focus groups, but one of the most effective is quick written feedback, signed and dated from potential customers / clients. You could also video feedback or record as an audio file.

Tap the image for a more detailed explanation.

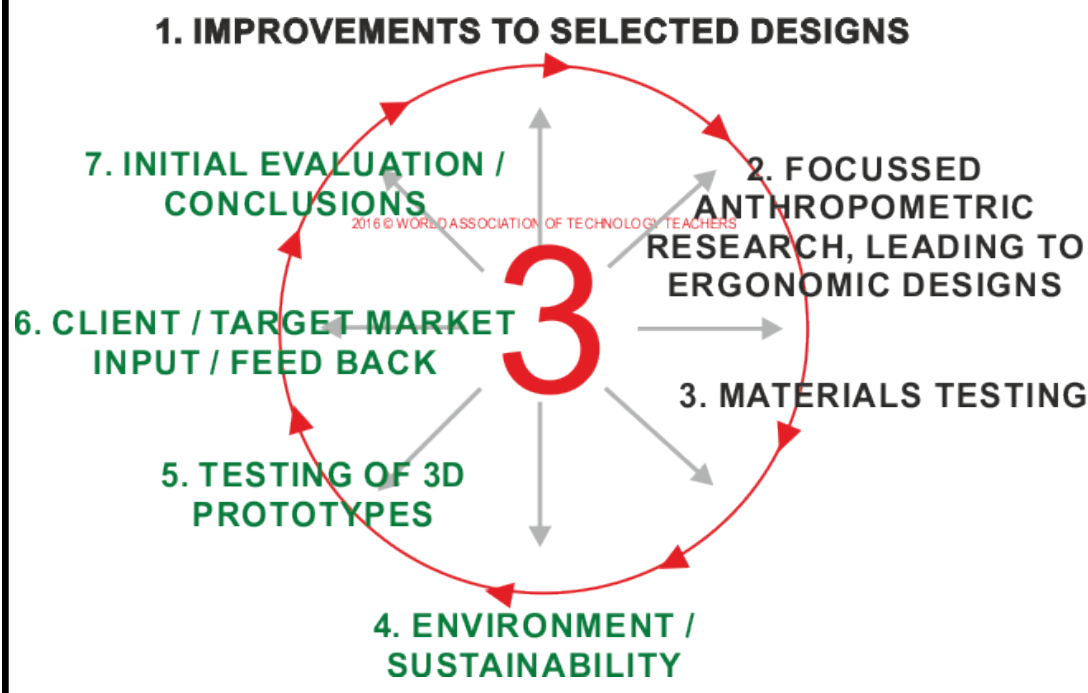
Tap the red button to return to the Contents page

CYCLE THREE - FROM IMPROVED DESIGNS TO INITIAL EVALUATION / CONCLUSIONS

Cycle Three is outlined below. The following slides will take you through each stage / aspect.

Tap the image for a more detailed explanation.

= EXPLORE = CREATE = EVALUATE



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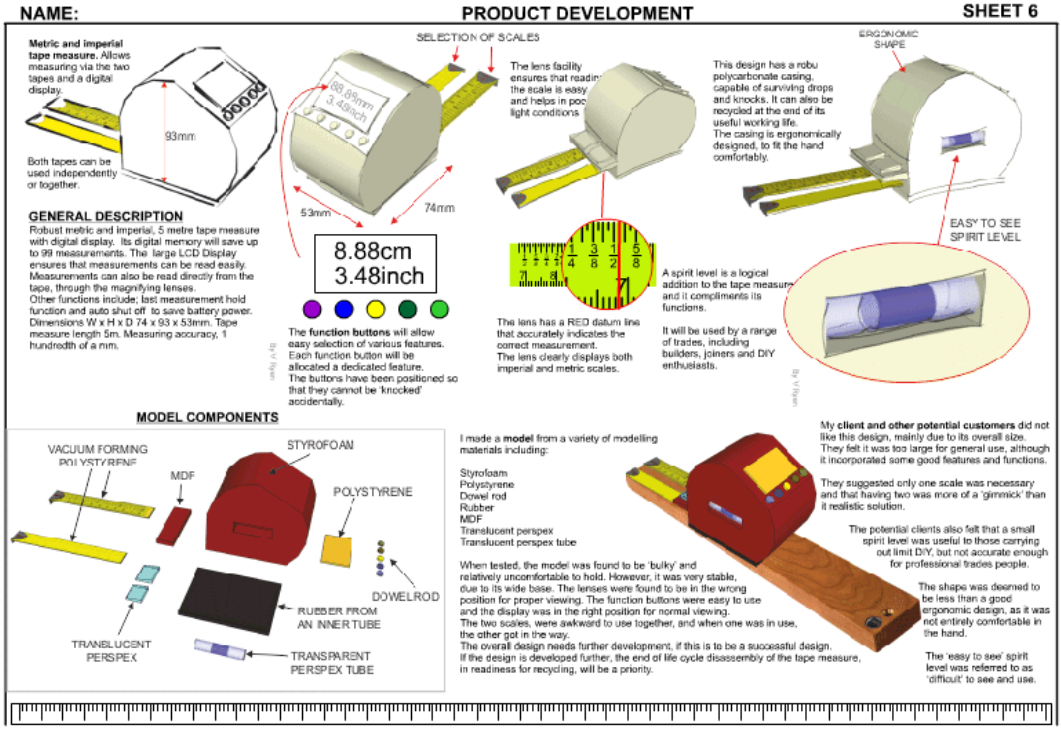
1. IMPROVEMENTS TO SELECTED DESIGNS

After receiving feedback and having carried out a survey of your initial ideas, select two, three or four for further development. This will involve more detailed drawings, models, feedback, testing etc... An example development sheet is shown below.

Tap the image for a more detailed explanation.



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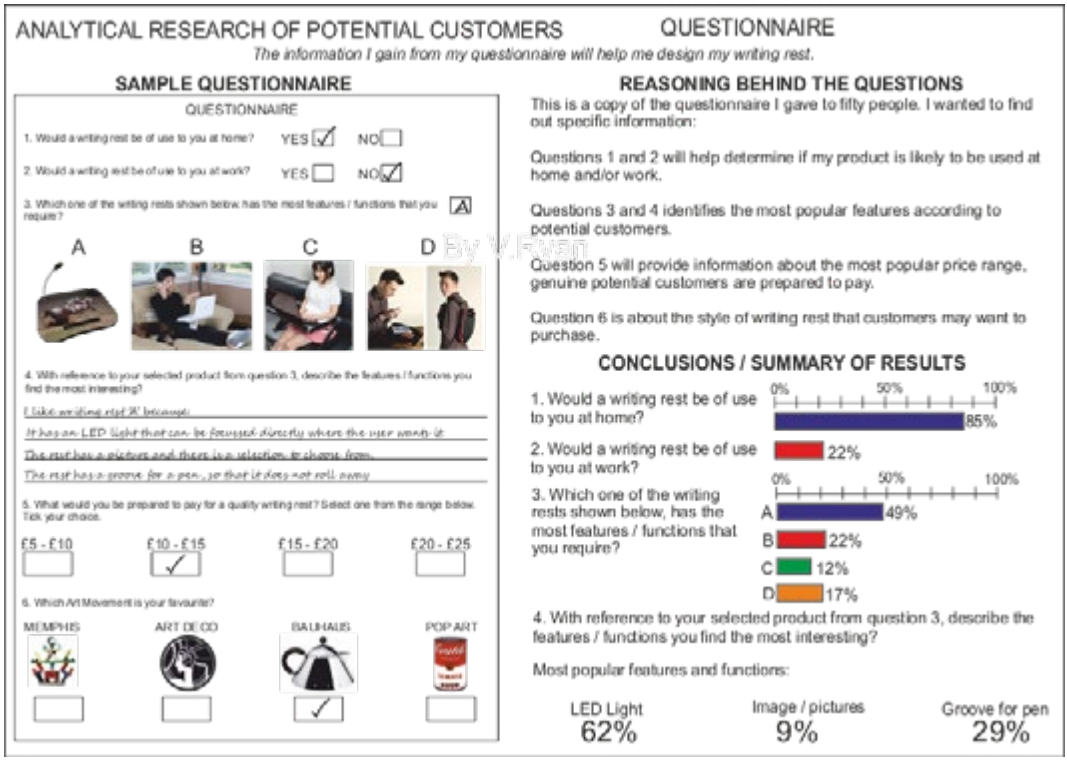
FOCUSSED QUESTIONNAIRES

Questionnaires are a very useful research 'tool'. If the right questions are asked, the findings can help to guide the development of a product. The key is to ask the right focussed questions and to analyse the findings carefully.

The questions should be targeted and direct, not general. Only ask relevant questions.

Tap the image for a more detailed explanation.



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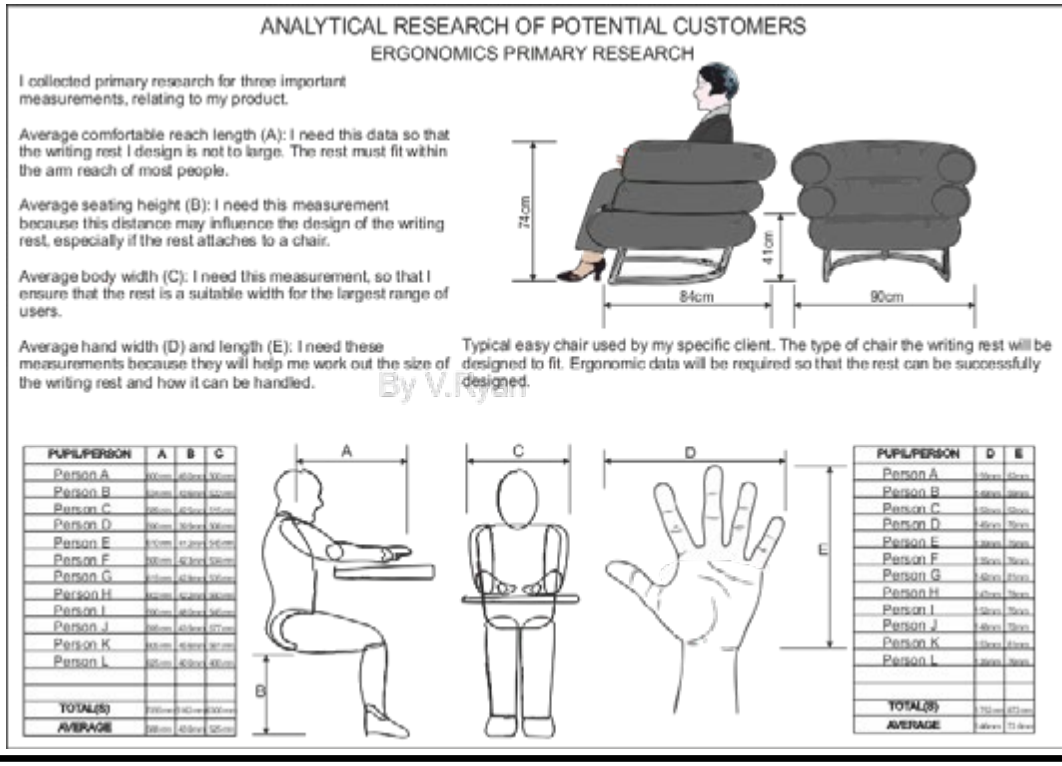
2. ANALYTICAL RESEARCH OF POTENTIAL CUSTOMERS - ERGONOMICS

Ergonomic research - In order to limit the amount of research carried out and to eliminate irrelevant research, there is another approach. The ergonomic research in the example below, is focussed on the client and acquiring only essential anthropometric data.

Tap the image for a more detailed explanation.



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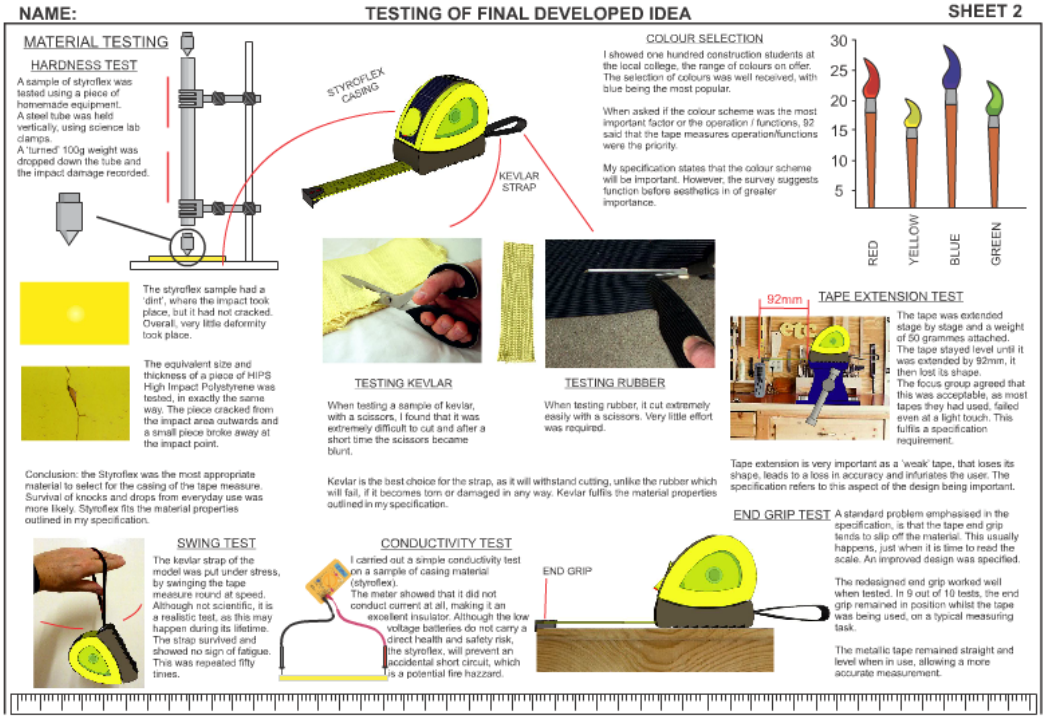
3. MATERIALS TESTING

Testing the materials you are using or intend to use is vital. When you are making models or simply sketching, you may feel it is the right time to test materials. Alternatively, materials testing on a separate design sheet or two. Below is a sample design sheet, concerned with testing and evaluating a specific design.

Tap the image for a more detailed explanation.



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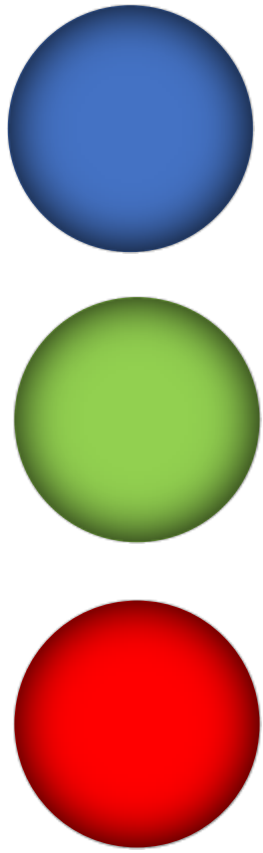
MATERIALS TESTING - LINKS

Below are links to resources that will help you decide on the types of tests you need to carry out on your designs / initial prototypes.



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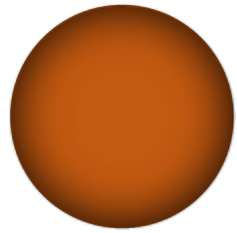
4. ENVIRONMENT, ECONOMIC AND SOCIAL ISSUES

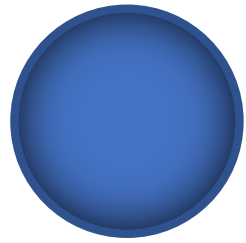
At almost every stage, include your knowledge of the environmental, economic and social needs AND requirements of the manufacturer, potential customer and the Law. How will the ideas you are developing fulfil any environmental, economic and social needs?

Tap the link buttons for environmental, economic and social issues.

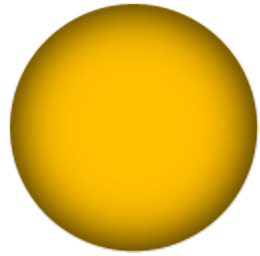
Mobile App covering Economic and Social Effects.



Mobile App covering major environmental issues



Links to website pages covering major environmental issues



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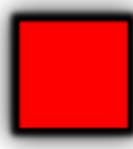
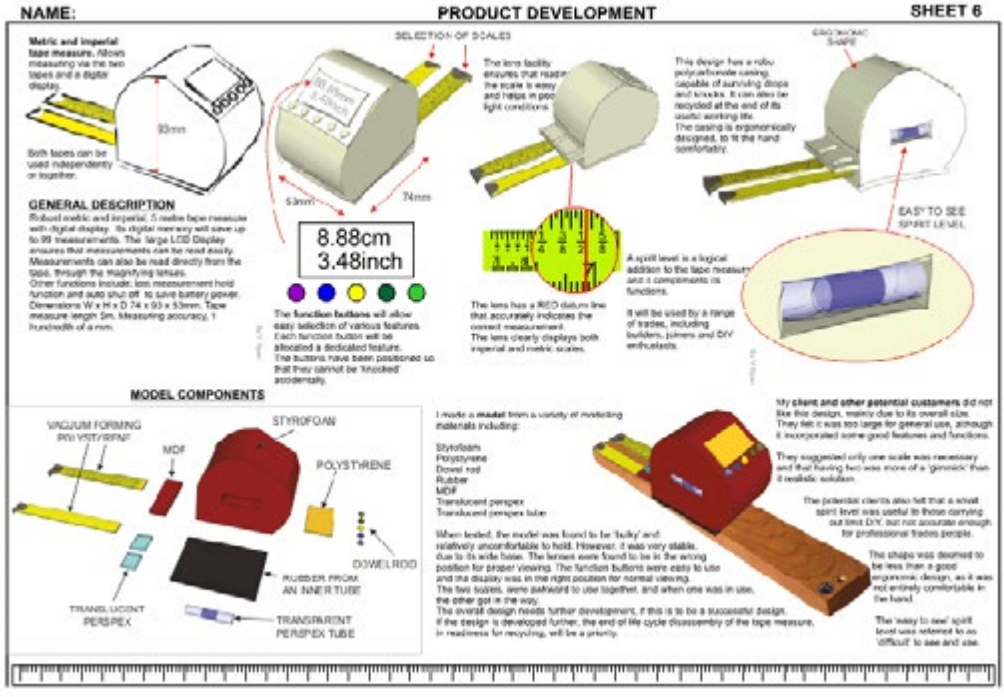


5. TESTING OF 3D PROTOTYPES

At this point put quality models through a form of product testing. Ensure that you record plenty of client / customer / focus group feedback. The sheet below shows another developed idea. Basic sketches have been used initially, followed by the manufacture of a model and testing. Client /potential customer input is emphasised on this design sheet, with the design finally being discounted.

Tap the image for a more detailed explanation.



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6. CLIENT / TARGET MARKET INPUT / FEEDBACK

Questionnaires / surveys / customer testing - all will provide valuable knowledge and suggestions for improvements. Consider written feedback, audio recordings, video recordings etc....

SEE PREVIOUS SLIDES REGARDING HOW THIS CAN BE ACHIEVED.

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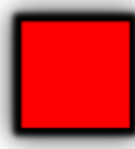
Tap the red button to return to the Contents page

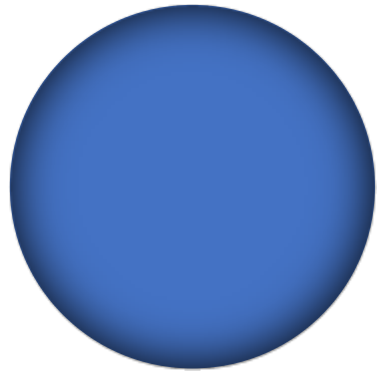


7. INITIAL EVALUATION / CONCLUSIONS

Write an evaluation / summary of what you have found and what you think you need to do, to make progress with **ONE** selected idea / design. You should also evaluate your ideas as they take shape.

Select what you and your client consider to be the best idea. Evaluate it – what is good (meets the specification) and what needs to be improved (in order to meet the specification)

Tap the link button for information on evaluating an idea



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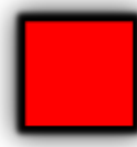
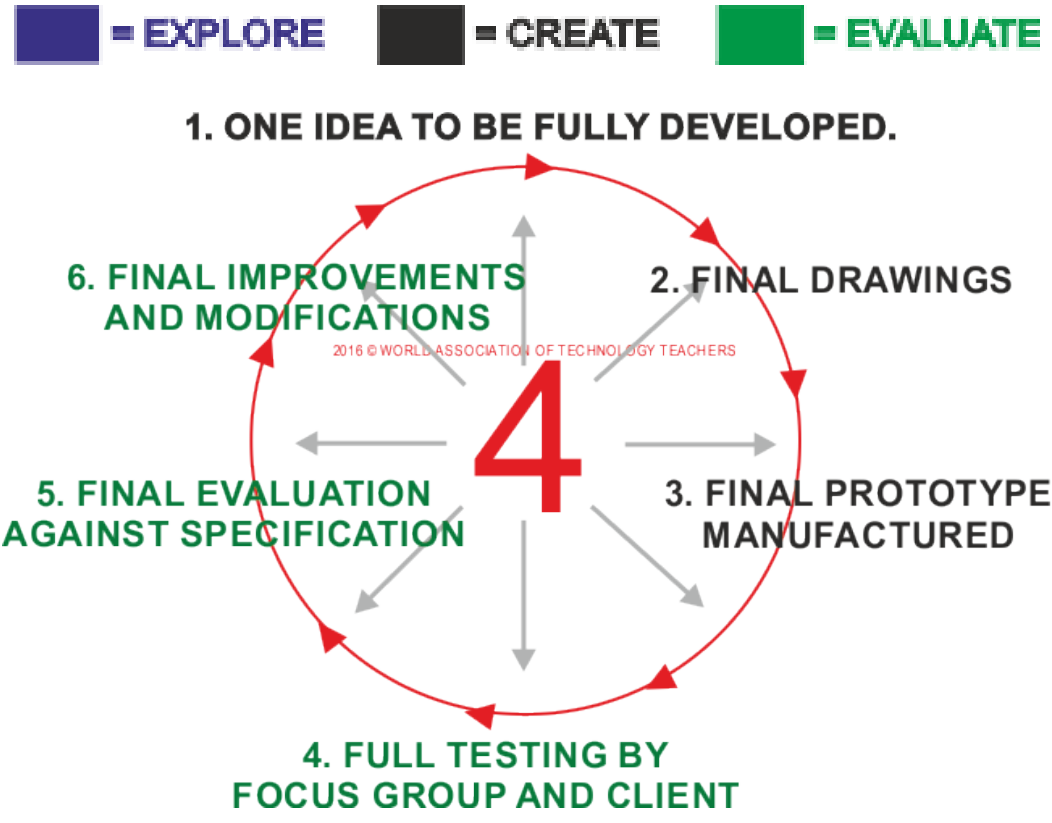


CYCLE FOUR - FROM SELECTED IDEA TO EVALUATION AND MODIFICATIONS

Cycle Four is outlined below. The following slides will take you through each stage / aspect.

Tap the image for a more detailed explanation.



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Tap the red button to return to the Contents page

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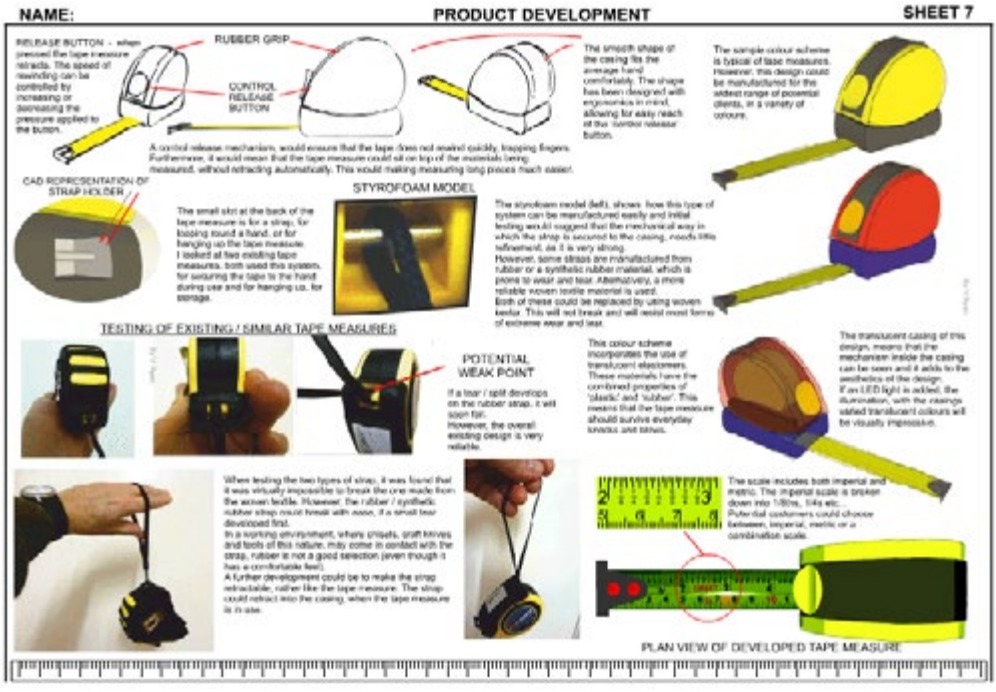
1. ONE IDEA TO BE FULLY DEVELOPED.

Develop one final idea, through model making, CAD, Feedback, Sketching, etc…..

This example design / development sheet below, shows the final design from conception to developed final idea. Again a combination of sketches, colour rendered drawings and models have been used. Detailed notes are included on each of the design sheets. A number of development sheets will be needed.

Tap the image for a detail.



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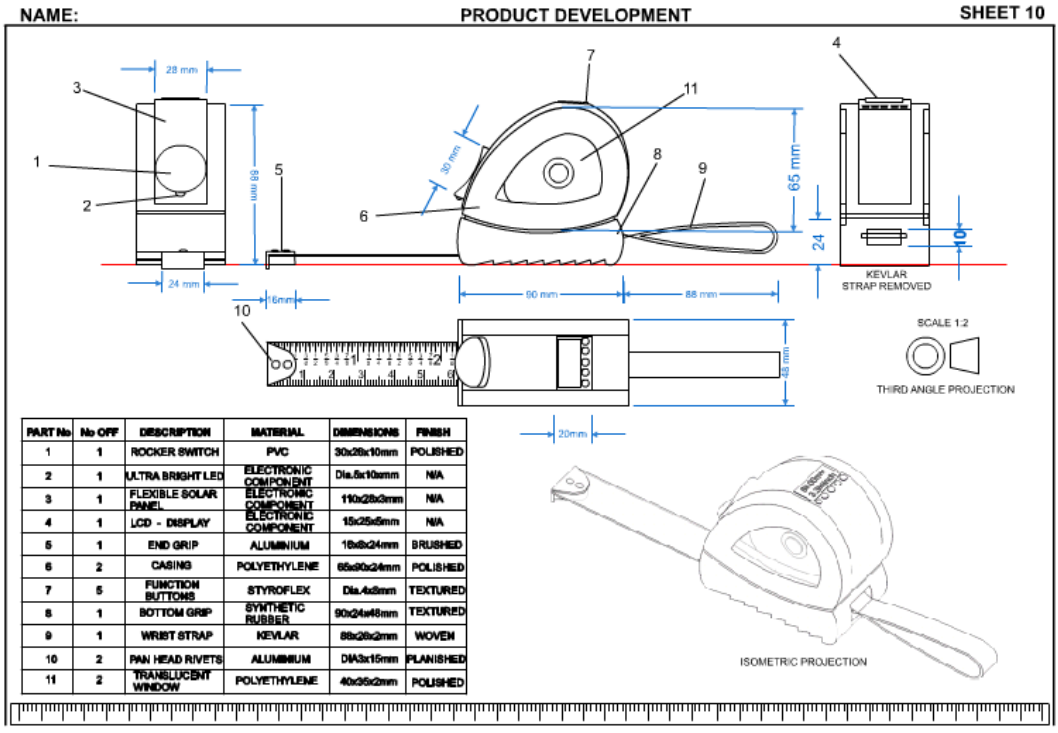
Tap the red button to return to the Contents page

2. FINAL DRAWINGS

Produce the necessary working drawings to manufacture the product, including parts lists.

The working drawing is a detailed sheet that shows the product as a series of accurate views, drawn to scale. The front, side and plan views are normally drawn. In addition, a 3D isometric drawing is included, to give extra detail.

Tap the image for a more detailed explanation.



PART No	No OFF	DESCRIPTION	MATERIAL	DIMENSIONS	FINISH
1	1	ROCKER SWITCH	PVC	30x26x10mm	POLISHED
2	1	ULTRA BRIGHT LED	ELECTRONIC COMPONENT	Dia.5x10mm	N/A
3	1	FLEXIBLE SOLAR PANEL	ELECTRONIC COMPONENT	110x28x3mm	N/A
4	1	LCD - DISPLAY	ELECTRONIC COMPONENT	15x25x5mm	N/A
5	1	END GRIP	ALUMINIUM	18x8x24mm	BRUSHED
6	2	CASING	POLYETHYLENE	65x90x24mm	POLISHED
7	5	FUNCTION BUTTONS	STYROFLEX	Dia.4x8mm	TEXTURED
8	1	BOTTOM GRIP	SYNTHETIC RUBBER	90x24x48mm	TEXTURED
9	1	WRIST STRAP	KEVLAR	88x26x2mm	WOVEN
10	2	PAN HEAD RIVETS	ALUMINIUM	DIA3x15mm	PLANISHED
11	2	TRANSLUCENT WINDOW	POLYETHYLENE	40x35x2mm	POLISHED

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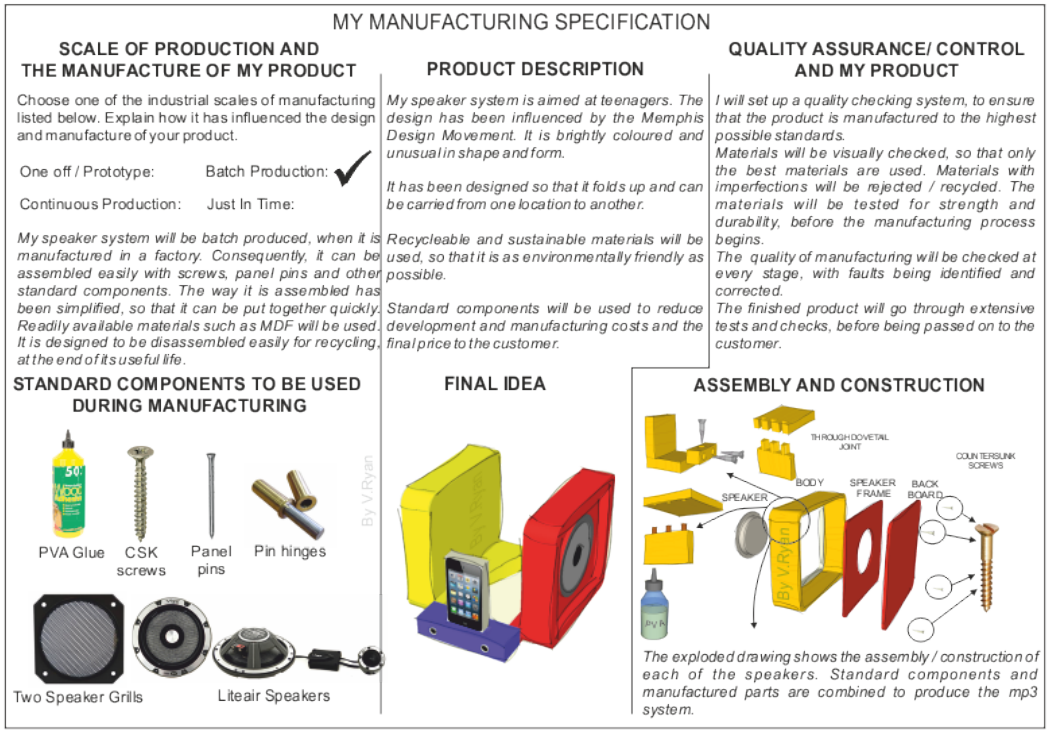
THE MANUFACTURING SPECIFICATION

Before manufacturing your prototype, you may need to produce a Manufacturing Specification (check with your teacher). This sheet explains the scale of manufacture and manufacturing systems, the final product description, quality assurance / control and assembly details

Tap the image for a more detailed explanation.



MY MANUFACTURING SPECIFICATION

SCALE OF PRODUCTION AND THE MANUFACTURE OF MY PRODUCT

Choose one of the industrial scales of manufacturing listed below. Explain how it has influenced the design and manufacture of your product.

One off / Prototype: Batch Production: ✓

Continuous Production: Just In Time:

My speaker system will be batch produced, when it is manufactured in a factory. Consequently, it can be assembled easily with screws, panel pins and other standard components. The way it is assembled has been simplified, so that it can be put together quickly. Readily available materials such as MDF will be used. It is designed to be disassembled easily for recycling, at the end of its useful life.

PRODUCT DESCRIPTION

My speaker system is aimed at teenagers. The design has been influenced by the Memphis Design Movement. It is brightly coloured and unusual in shape and form.

It has been designed so that it folds up and can be carried from one location to another.

Recycleable and sustainable materials will be used, so that it is as environmentally friendly as possible.

Standard components will be used to reduce development and manufacturing costs and the final price to the customer.

QUALITY ASSURANCE/ CONTROL AND MY PRODUCT

I will set up a quality checking system, to ensure that the product is manufactured to the highest possible standards.
Materials will be visually checked, so that only the best materials are used. Materials with imperfections will be rejected / recycled. The materials will be tested for strength and durability, before the manufacturing process begins.
The quality of manufacturing will be checked at every stage, with faults being identified and corrected.
The finished product will go through extensive tests and checks, before being passed on to the customer.

STANDARD COMPONENTS TO BE USED DURING MANUFACTURING

PVA Glue, CSK screws, Panel pins, Pin hinges, Two Speaker Grills, Liteair Speakers

FINAL IDEA

ASSEMBLY AND CONSTRUCTION

THROUGH DOVETAIL JOINT, COUNTERSUNK SCREWS, BODY, SPEAKER FRAME, BACK BOARD, SPEAKER

The exploded drawing shows the assembly / construction of each of the speakers. Standard components and manufactured parts are combined to produce the mp3 system.

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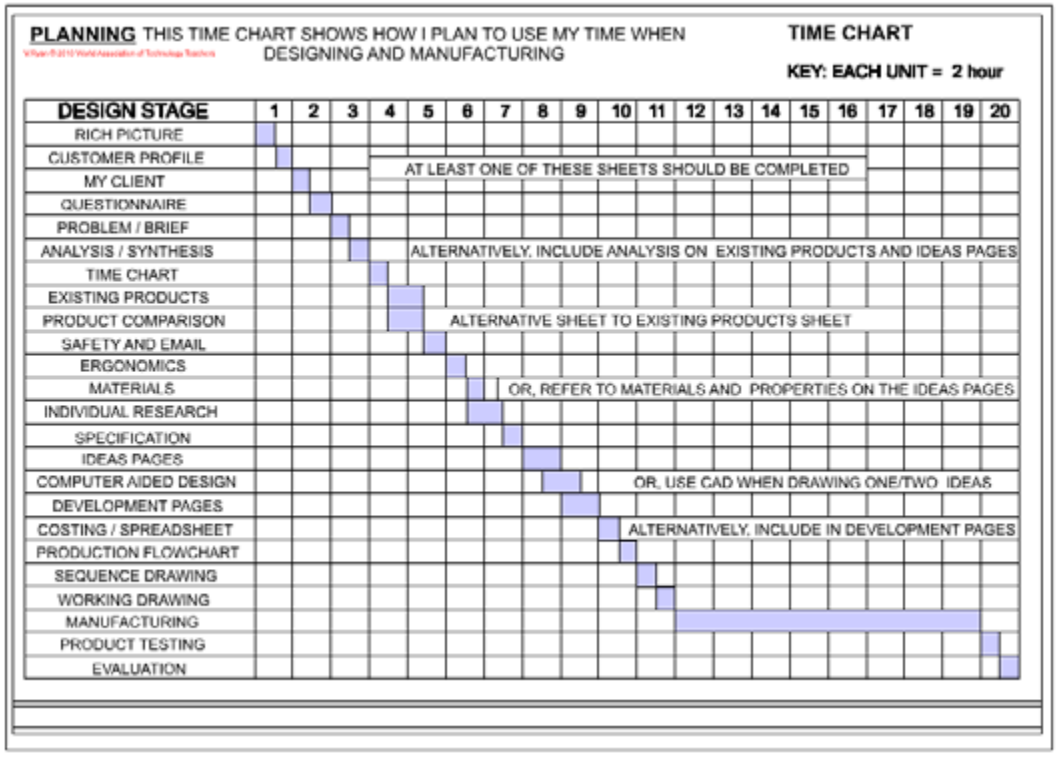
PRODUCTION PLANS

THE TIME CHART: this has all the stages of **manufacture** down the left hand side and the time allocated to each stage represented by shaded areas. The shaded areas usually represent hours. REMEMBER TO KEEP TO THE STAGES OF MANUFACTURING!!! FOR YOUR NEA

Tap the image for a more detailed explanation.



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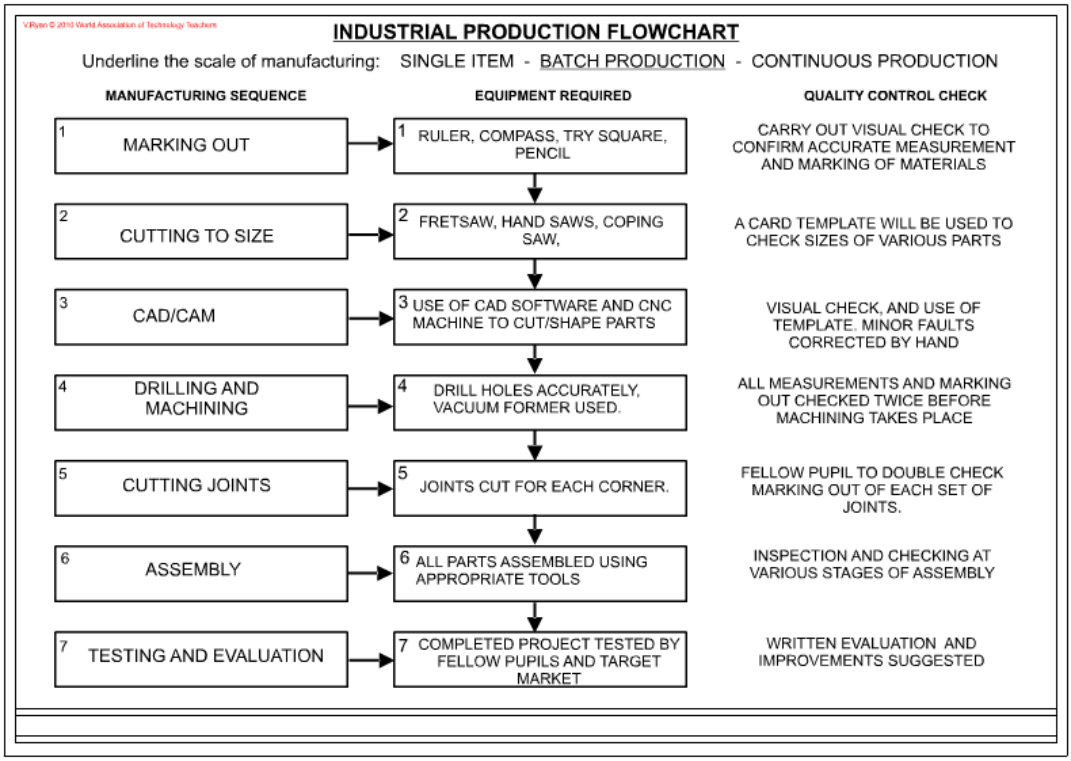
PRODUCTION PLANS

PLANNING - USING A FLOWCHART: A flowchart is an excellent way of planning a project. Each stage of the project is set out as a sequence of events. REMEMBER TO KEEP TO THE STAGES OF MANUFACTURING!!! FOR YOUR NEA

Tap the image for a more detailed explanation.



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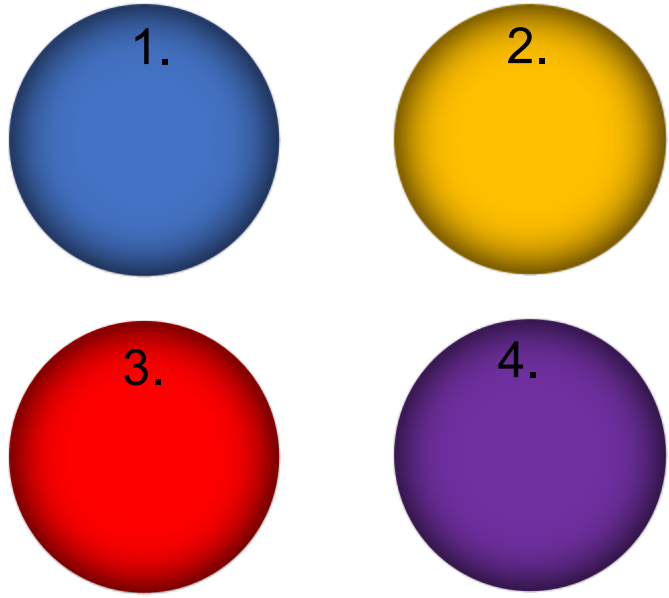
3. FINAL PROTOTYPE MANUFACTURED

Keep a photographic record of every stage of manufacture. Describe each stage of manufacture and consider how each stage can be made more efficient.

Tap on the link buttons below, for general guidance on producing a log book of manufacture. (ask your teacher if this is required by your examination Board



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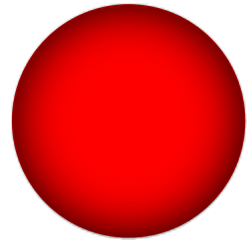
4. FULL TESTING BY FOCUS GROUP AND CLIENT

The final product should be fully tested by the client / focus group / potential customers and your self. Keep a record of all testing and suggestions.

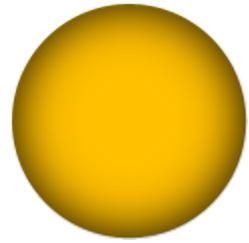
Tap the image for a more detailed explanation and samples.

TESTING AND EVALUATE – WHY?

SAMPLE TESTING AND EVALUATION SHEET 1



SAMPLE TESTING AND EVALUATION SHEET 2



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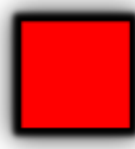

5. FINAL EVALUATION AGAINST SPECIFICATION

In addition, you may want to produce an evaluation sheet that evaluates your final prototype agains7 each of your specification points

6. FINAL IMPROVEMENTS AND MODIFICATIONS

What future modifications have been suggested by the potential customers, focus group / client? What modifications do you think you could make to the next prototype

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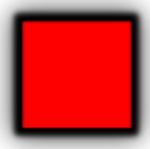

TWO PIECE ROTATING ITERATIVE DISK

(an Aid to the Iterative Process)

Composed of two disks, allowing rotation between each of the iterative cycles. An aid to pupils in deciding on the next stage. Pupils simply rotate the top disk (CLOCKWISE OR ANTICLOCKWISE), to help them decide on the next stage / design tool, according to their individual NEA projects.

Tap the image for more information including a printing pdf of the disks

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