

PRODUCT DEVELOPMENT EXERCISE DEVELOPMENT DESIGN SHEET 4

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On behalf of The World Association of Technology Teachers

W.A.T.T.



World Association of Technology Teachers

This exercise can be printed and used by teachers and students. It is recommended that you view the website (www.technologystudent.com) before attempting the design sheet .

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PRODUCT DEVELOPMENT EXERCISE

PAGE FOUR

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THE TAPE MEASURE

Study the sample development page (page 2).

How many of the key areas (page 3) have been mentioned on this sheet? Place a tick against the areas included.
(See slide three for key areas)

What grade would you give this development sheet?

WHAT AREAS / TECHNIQUES NEED TO BE INCLUDED ON THE FOLLOWING DEVELOPMENT SHEETS?

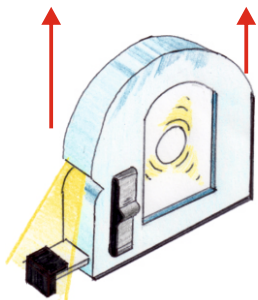
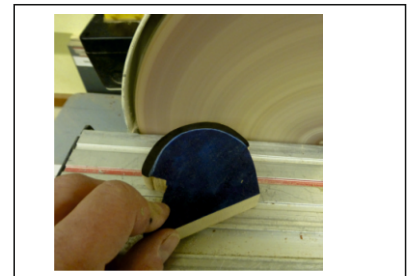
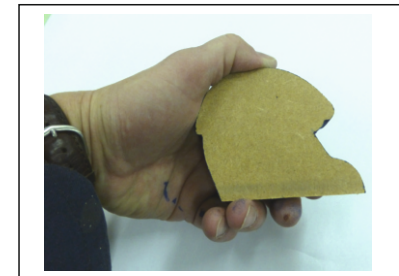
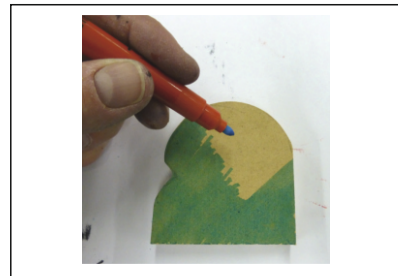
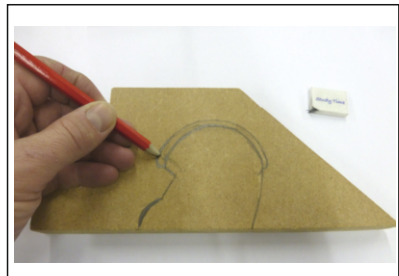
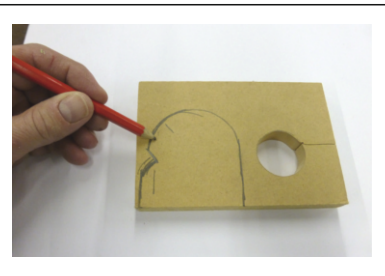
I made a series of basic models, from MDF and High Density Polystyrene. This allowed me to experiment with the initial shape. I changed the shape of idea 1 slightly as a result of cutting the material. See below, compared to the original sketch

I also changed the proportions of each part of idea 2, when I started to draw the basic design on to the MDF. I made the idea slightly higher, to accommodate the rubber hand grip. This gave the tape measure a more balanced look.

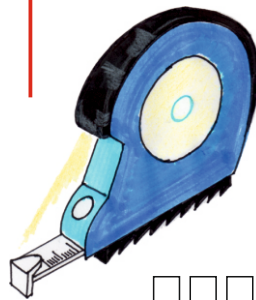
Applying colour and shade to each of the MDF models, allowed me to judge how the colour scheme enhanced to model and how it may look on the full sized product. Brighter, less traditional colours were more appealing.

The basic models helped me refine the 'ergonomics'. I handled the models and tried them out, in the normal tape measure holding position. The first idea was less comfortable than the 'rubber gripped' second idea.

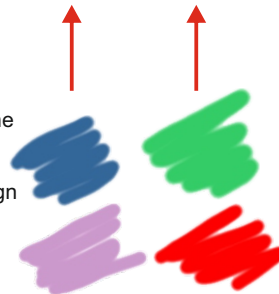
Using the sanding disk, I was able to experiment with the shape of the 'grip', until it felt comfortable. I tried filing by hand, to produce individual finger grips. This added to the time of manufacture and did not feel any more comfortable.



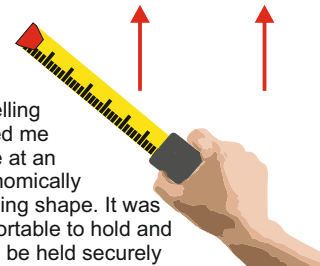
The shape arrived at through modelling, is taller, as the model was more aesthetically pleasing, when altered.



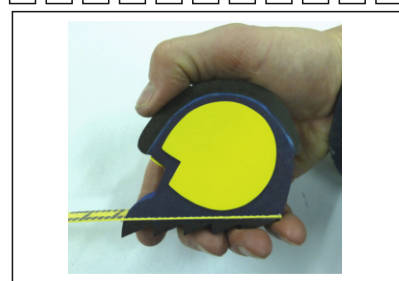
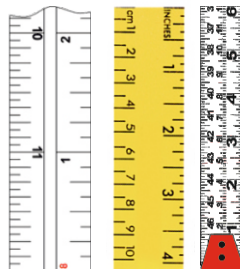
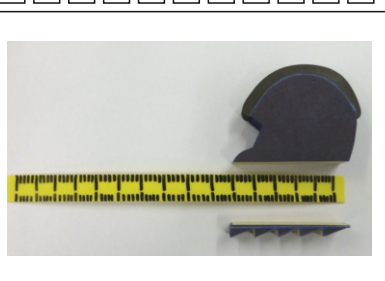
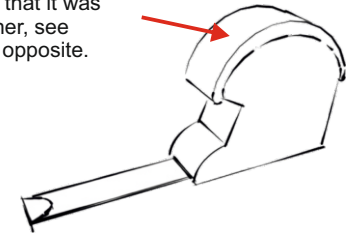
I was able to test each of the colours suggested on previous design sheets. They are all suitable.



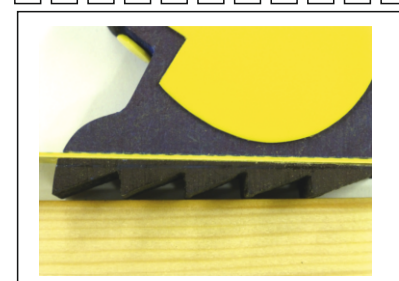
Modelling helped me arrive at an ergonomically pleasing shape. It was comfortable to hold and could be held securely when the tape was in use.



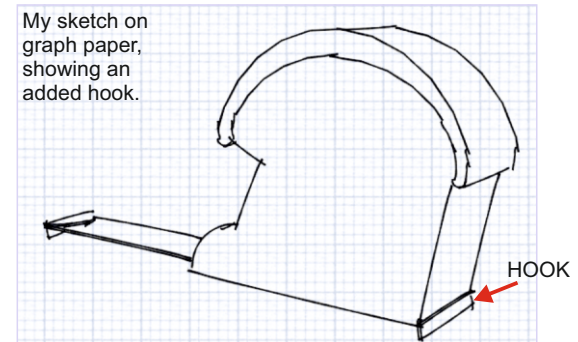
I altered the rubber grip so that it was smoother, see sketch opposite.



A potential customer tested the completed model. He like the potential for a soft grip and the holding position. However, he felt the bottom grip may not be completely effective, when the tape measure is in use.



The rubber grip at the bottom of the casing looks good, but when tested it tended to slip. This was due to the tape measure being lightweight. An alteration is sketched opposite.



A potential solution is to add a 'hook' to the bottom of the tape measure casing. This could be used to hook on to the opposite end of the material being measured. The combination of the rubber grip and hook, may ensure the tape measure does not slip when being used.



Drawing the scale on to the polystyrene modelling material, made me consider the type of scale that should be used. It is possible to manufacture the tape, so that there are alternative scales (CM, mm, imperial etc...) The customer could choose which scale suited him/her.



ANTHROPOMETRICS AND
ERGONOMICS

HEALTH AND SAFETY ISSUES
DISCOVERED AND RESOLVED?

METHOD OF
CONSTRUCTION
MODEL AND REAL PRODUCT

MANUFACTURING
PROCESSES
INJECTION MOULDING ETC...

MATERIALS
PROPERTIES OF MATERIALS

DISASSEMBLY
OF PRODUCTS/
MODELS

CUSTOMER /
CLIENT VIEWS

STYLE / AESTHETICS

DIFFERENT IDEAS
VALID IDEA ?
DEAD END?

EVALUATE IDEAS

FOUND ANY PROBLEMS?
WHILE SKETCHING / MODELLING

PRODUCT DEVELOPMENT SHEETS

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SOLVED ANY PROBLEMS?
WHILE SKETCHING / MODELLING

EVIDENCE
PHOTOGRAPHS IN REAL TIME
AS YOU WORK
VIDEO CLIPS

VIEWS OF OTHERS

MODELS AND PROTOTYPES
2D AND 3D

ONGOING TESTING
EXPERIMENTATION

ENVIRONMENT
LIFE CYCLE
SUSTAINABILITY

COSTS
TO MANUFACTURE
PRICE TO CUSTOMER

REFER
TO SPECIFICATION
REGULARLY
CHECK YOU ARE KEEPING TO
THE SPECIFICATION

SKETCHES
EXPLODED VIEWS
COLOUR RENDERED ILLUSTRATIONS
SECTIONAL VIEWS
ORTHOGRAPHIC
CAD COMPUTER AIDED DESIGN

SIZES
LENGTH, HEIGHT AND DEPTH