



THE TENZ 2020 TECHNO CHALLENGE



How to develop an idea

Development: what do I need to do next?

Once you have analysed your initial concepts you need to choose one or two ideas to develop further.

Ideas can be developed and modified (improved) through:

- functional modelling,
- testing and trialling,
- further research,
- discussion with stakeholders.

Throughout development keep **checking and testing** the design - Does it still **fill the need**? Does it **fulfil the attributes**? Any **stakeholder feedback**?

Explain what you need to decide on/develop **next**.

Development: what should I modify or test?

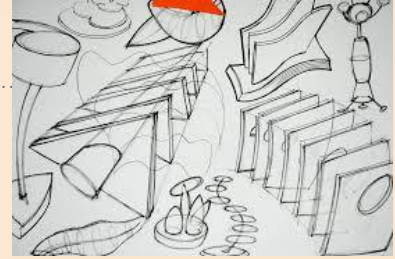
Some suggestions for development:

- Size
- Shape
- Position/layout
- Material/Ingredient choice
- Text and fonts
- How outcome is to be made
- How it could work
- Decoration
- Fastenings and fixings

Examples of modelling types are on the next pages to help. Choose the most suitable ones for your project. After each model you have used, explain the decisions/changes you have made.

Functional Modelling: Freehand Sketches

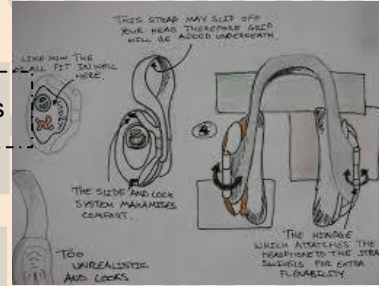
Freehand sketching



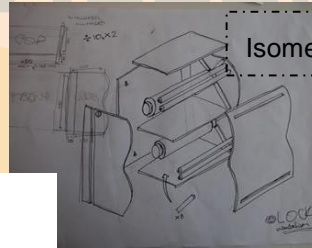
A wide variety of sketches can be used to help develop the appearance of a design:

Examples of sketches:

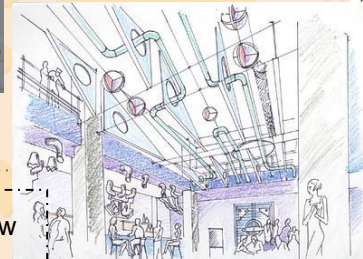
Annotated sketches



Isometric, exploded view

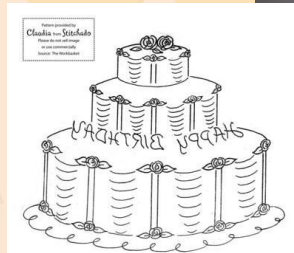
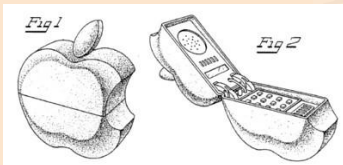


Perspective view



Images from flickr.com

- 2D (birdseye view, side, bottom, etc)
- 3D (isometric, oblique, perspective)
- Annotated (labelled)
- Exploded views
- Sectional views

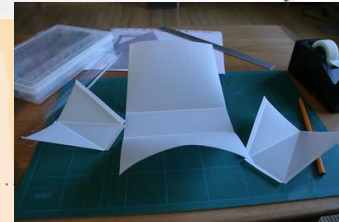
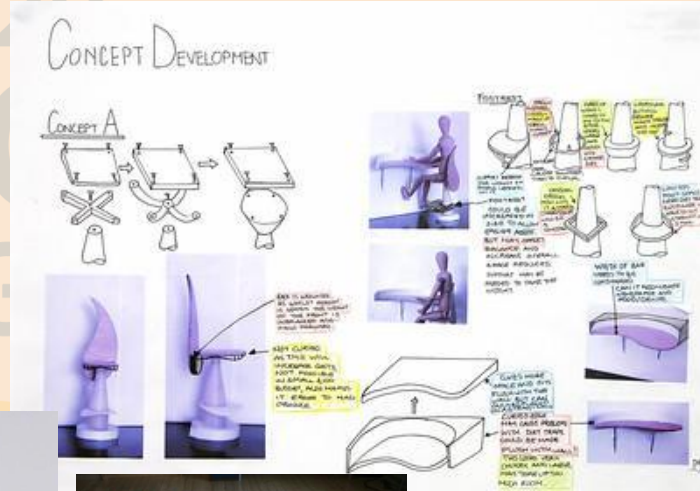


Functional Modelling: 2D & 3D hard material models

Material models can be used to help develop size, shape, material choice, function, etc:

- Cardboard
- Clay
- Wax
- Foam
- Multi material (wood, metal, plastic, etc)

Examples of models:



These models can be actual size or scaled.



Functional Modelling: 2D & 3D **soft** material models

Different models can be used to help develop size, texture, appearance, function, assembly, etc:

- Paper patterns
- Calico toiles
- Testing - types of stitches, fastenings, decoration.
- Material choice

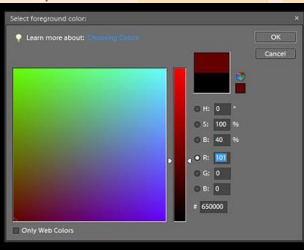
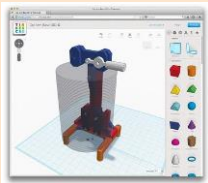
Examples of models:



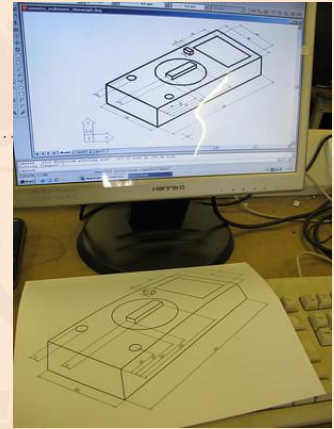
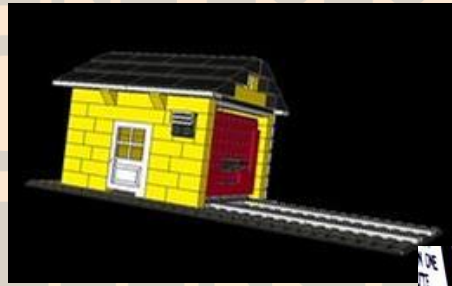
Functional Modelling: CAD models

Using CAD (computer aided design) to develop and test aesthetics and function.

- TinkerCAD (for 3D models & electronics)
- Sketchup (for 3D models)
- Photoshop/Pixlr Editor (for media design)
- G suite (for media design)



Examples of models:



Functional Modelling: Recipe testing

You can test food recipes in different ways too by:

- Changing ingredients
- Changing quantities of ingredients
- Trialling the processes used to make the outcome

Examples of testing:



RECIPE

CHOCOLATE LUCKY LOAF CAKE

1 purchased loaf (3½" x 6" x 3")	½ cup sweetened condensed milk
1 pkg. Rockwood Chocolate BITS	½ teaspoon vanilla
2 teaspoons hot water	

Slice cake lengthwise in three layers. Melt Chocolate BITS over hot water and stir until smooth. Add condensed milk and blend well. Remove from heat, stir in vanilla and hot water. Beat until...

Functional Modelling: Testing processes

To help decide how to make an outcome you can test the process.

This can include:

- Testing tools and equipment
- Testing methods
- Testing types of software and apps
- Testing systems (electronic, mechanical, etc)

Which would be the most suitable?

Examples of testing:



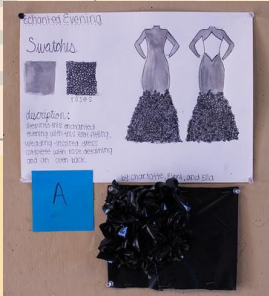

Material Investigation

Material Investigation is where you research the materials you have available to you, e.g. what have you got in your home now?

Material testing can also be helpful. Test the *material properties* to help you to choose the best material, for example strength, durability, water resistant, washability, etc.

Taste testing can be used for Food Technology. (star analysis)

An example of testing material properties:

Material	Test One: Strength	Test Two: Easy to clean (water resistant)	Summary
Cardboard (cereal box)	<i>Easy to cut, can be flimsy, could be ripped easily.</i>	<i>Can be wiped down with a damp cloth. Turns soggy in water.</i>	<i>May be easy to cut and shape but not easy to clean after feeding.</i>
Plastic (bottle)			
Card tube			
Towelling (an old towel)			

Images from flickr.com

Summary of development

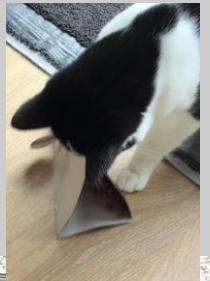
Examples of Cat feeder modelling:



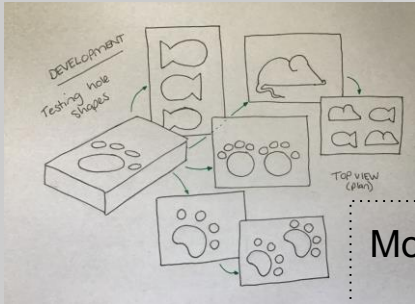
Testing and choosing materials



Material modelling



Stakeholder testing and observations



Modifying the hole shape in box



Testing materials - water resistant



Final Design



After you have completed your development you should have a very clear idea of your final outcome.

You can **draw a final design** to help bring all of your ideas together.

Remember to **explain** the features, how it works, and how it fulfils the need.

Examples of instrumental models to help explain the final idea on next slide.

Final Design

