SAMSUNG

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TENZ TECHNOLOGY EDUCATION NEW ZEALAND
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Solve for Tomorrow 2022

How to develop an idea

What have I completed so far?

- **Brainstorm** and created an **initial brief**

  e.g. I need to design and make a product to slow down my cats eating habits so it takes time for them to eat their food.

- **Research** into the brief
- Written **attributes/specification** for my outcome
- **Initial concept ideas** for my outcome

Physical Attributes	Functional Attributes
It must be made from **materials available** at home, e.g. cardboard, plastic bottles & packaging, etc	It must be **easy to wash** and clean, to stay hygienic.
It must contain **one scoop** of cat biscuits in the bowl/feeder.	It must be **strong,** to withstand use by young cats with sharp claws.
It could fit in with the colour scheme of the room - **brown, beige, charcoal, grey**.	It must be **durable**, to last a longer time.
It must **fit a cat paw** in it (bigger than 45mm x 30mm)	It could **help to exercise** the cat at the same time or provide entertainment - like a toy.
It needs to **fit onto the cat feeding mat** (50mm x 30 mm)	

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**? Is it still **fit for purpose?**

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

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

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

Examples of sketches:

Freehand sketching
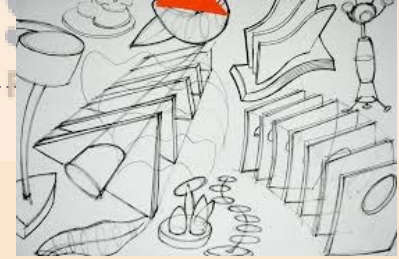
Annotated sketches
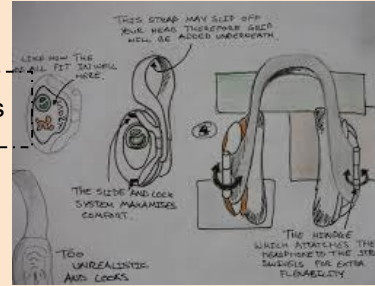
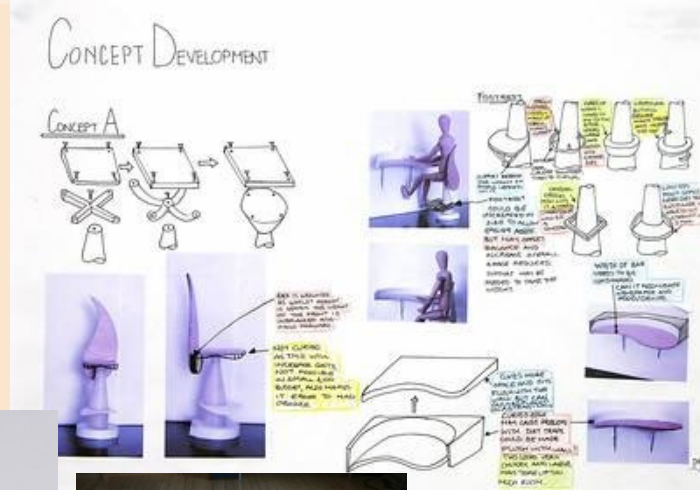Isometric, exploded view
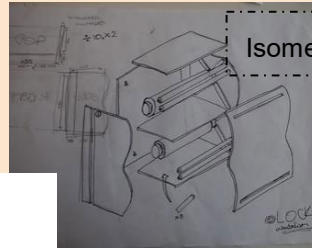
Perspective view

Images from flickr.com
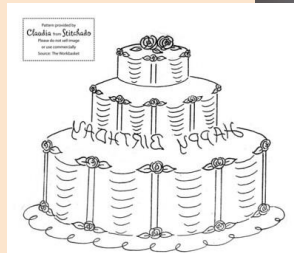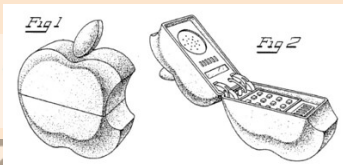
Functional Modelling: 2D & 3D **hard** material models

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

- Cardboard
- Clay
- Wax
- Foam
- Multi material (wood, metal, plastic, etc)
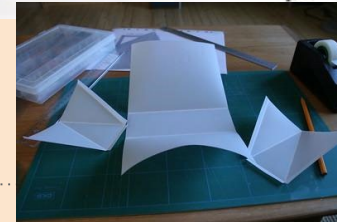
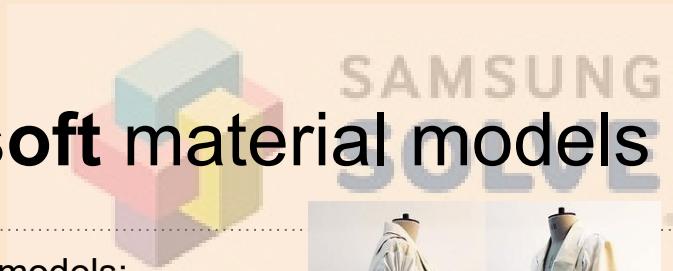These models can be actual size or scaled.

Examples of models:

Images from flickr.com

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.
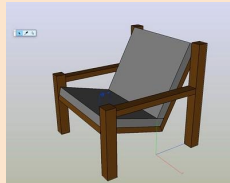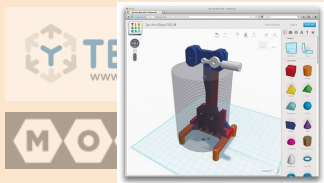- Material choice
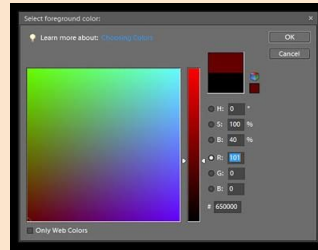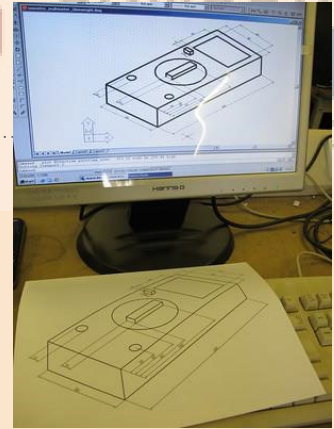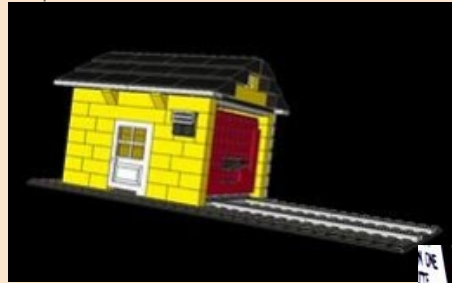
Examples of models:

Functional Modelling: CAD models

Using **CAD (computer aided design)** to develop and test aesthetics and function. *Some software examples:*

- 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:

Images from flickr.com

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:

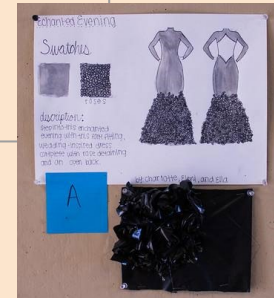Images from flickr.com

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)	*Easy to cut, can be flimsy, could be ripped easily.*	*Can be wiped down with a damp cloth. Turns soggy in water.*	*May be easy to cut and shape but not easy to clean after feeding.*
Plastic (bottle)			
Card tube			
Towelling (an old towel)			

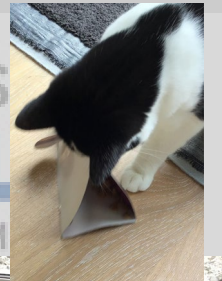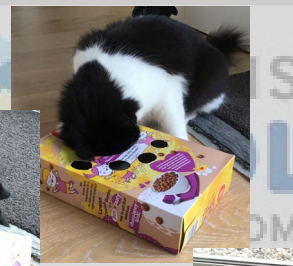Images from flickr.com

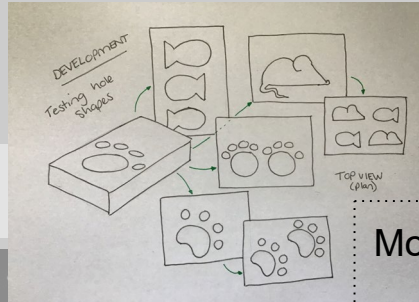# Summary of development

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.

You can also explain the **steps for making** the final outcome, this is called *planning for practice*.

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

Final Design

Functional Modelling: Instrumental drawings

A wide variety of drawings can be used to help develop and explain a final design:

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

Examples of drawings:

Oblique

Section, ortho proj & Isometric views

Exploded views & Ortho proj.

Images from flickr.com