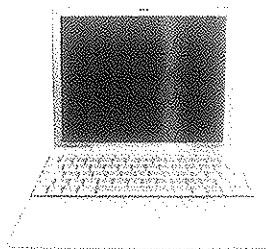
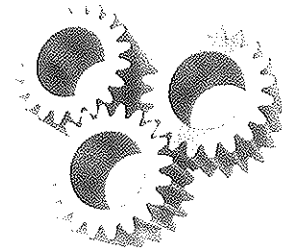
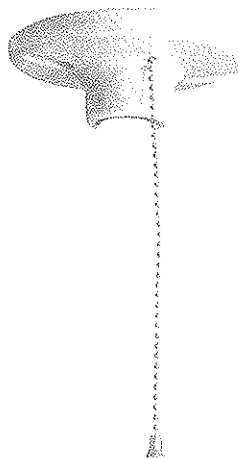
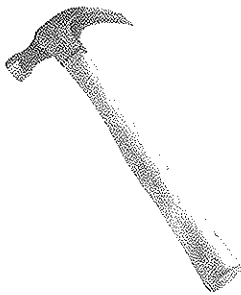


Clancy Catholic College

Technology Mandatory

Introduction to Design



Students Name:

Teacher:

Design

Design Terminology

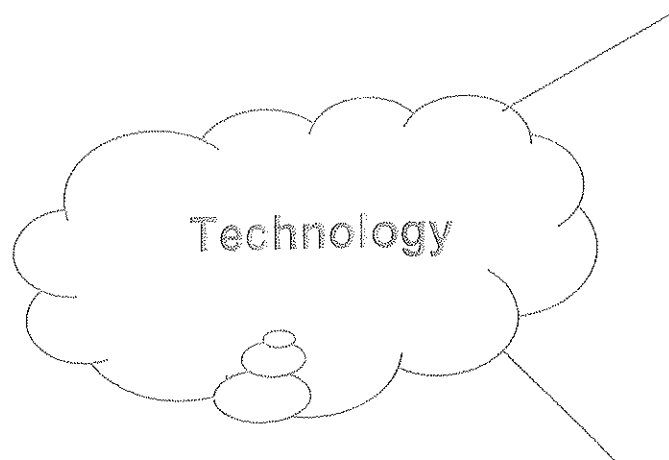
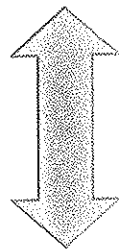
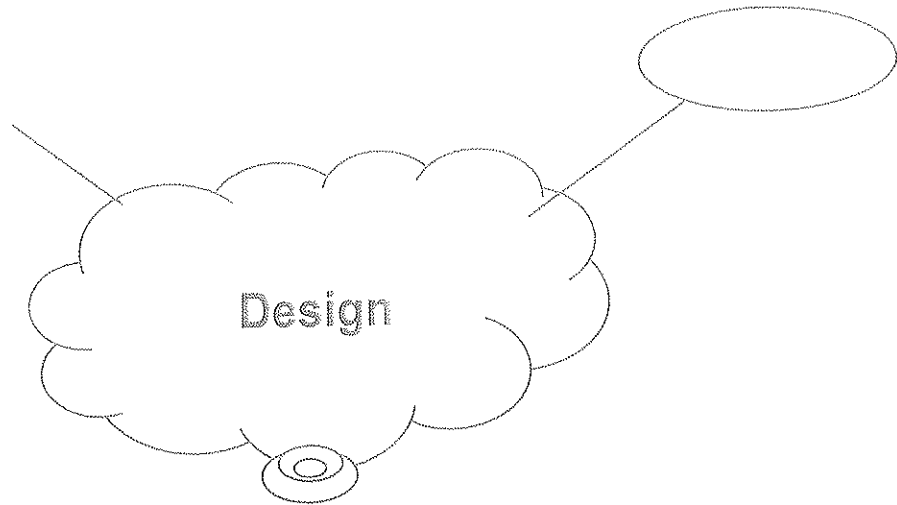
Technology Mandatory is a subject that has a broad range of terminology such as

Vocabulary List

Resource	
Aesthetics	
Function	
Realisation	
Criteria	
Success	
Strengths	
Weaknesses	
Limitations	
Evaluation	
Needs	
Wants	
Ergonomics	
Sustainability	
Costs	
Durability	
Renewable	

Complete the following Mind Maps.

What do you think of when you hear or see the words "Design" and "Technology"?



1. What is Design?

The process of design is completed everyday by everyone...but most of the time we don't even realize that it is happening.

Design Definitions

<i>Word</i>	<i>Meaning</i>	<i>Sentence</i>
Design (verb)		
Designer (adjective)		

What is Technology?

Technology is more than just computers. Technology enables us to design, make, evaluate and use products, systems and environments to improve lifestyle. Technology can be real or digital.

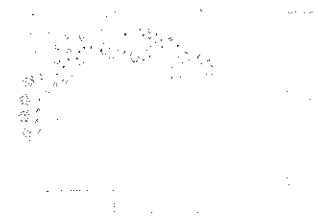
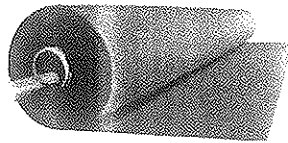
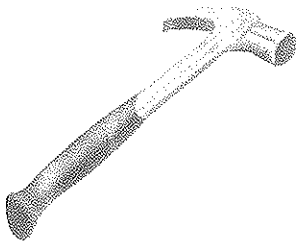
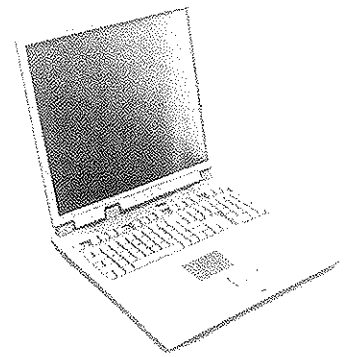
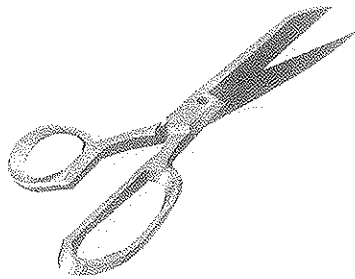
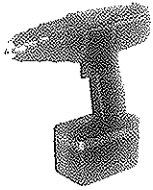
What is Design?

Design is about creating something to meet a need. This usually means that designers have to plan what they are going to do, consider the needs of the client, and work within constraints of time, money and safety. They also need to consider the social, cultural, ethical and environmental issues that their designs might have.

Sometimes design is the invention of something new but sometimes it involves changing something that already exists to be different or better.

What is technology?

Often people think technology means very complicated pieces of equipment. However, technology is about using tools, resources and systems or methods to improve our daily lives and environments. Tools include simple tools like a pair of scissors as well as advanced examples such as a computer. Resources are the things we use to achieve a design solution. Resources can be two types, human and non human. Human resources include the skills, knowledge and energy of humans. Non human resources include money, materials, energy and equipment. Systems include the methods or processes we use to achieve a solution. An example would be a car production line; it is more efficient for people to specialize in different skills than for one person to make the whole car.



Technology education should help you choose suitable technologies; learn how to make and do things and how to be confident using, technology. Technology is something we control; it shouldn't control us.

2. Why do we do it?

The main reason that we design is to SOLVE A PROBLEM to make our life easier or to correct products, systems or environments that are in trouble or require improvement.

Thus, problem solving can be related to fulfilling human 'needs' and 'wants'.

A *need* is something that we have to have in order to survive.

A *want* is something that we desire or think we need in order to ensure survival.

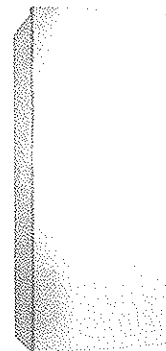
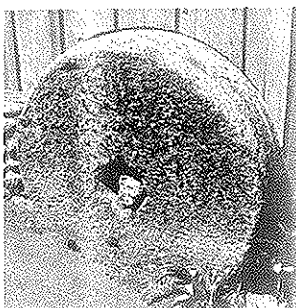
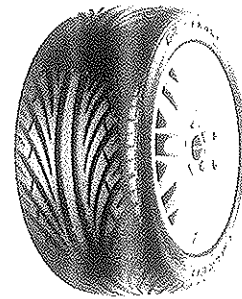
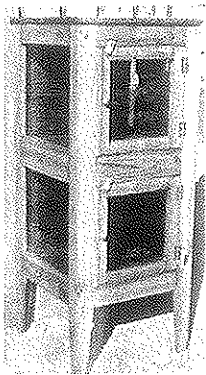
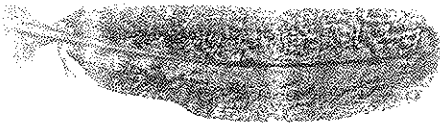
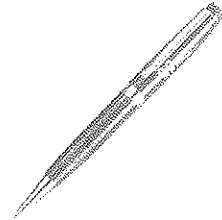
Indicate which of the following words are problems, needs or wants in regards to survival.

Water		Sleep	
Travel		War	
Car		Chocolate	
Warmth		Poverty	
Hair Gel		Shelter	

There are *NO RIGHT OR WRONG ANSWERS* when it comes to designing, just better ways of doing it. If you do not try then you will never succeed.

Technology – Yesterday, Today and Tomorrow

Technology does not stay the same. It changes as people's needs change or a new material or developments become available. Look at the drawing below and draw a line to connect the simple technology to the advanced technology.



Who Designs?

There are a whole range of jobs that use design skills. However, everyone participates in design activities at some stage in their lives. Design activities can range from planning meals for the weekend, organizing a way of storing school notes for easy use or designing an overpass for a busy road system. The role of designers is to design and test possible solutions to meet the needs of people. However, designers must always work within certain limits. Some of these limits would include money, time, energy, repairs, resources, the environment and safety. Therefore it is essential to get the correct balance between the benefit and the cost of each design. Designing is an important activity, one which should be carried out responsibly. It should aim at improving our lifestyle without causing problems for others. Do you know who designs and what they design? Check your knowledge by completing these activities.

Draw a line to connect the role with the activity. Use your dictionary if you don't understand any of the words.

Role	Activity
Animator	Assist clients to plan areas surrounding buildings
Fashion designer	Design buildings to meet the needs of clients
Industrial designer	Creates new clothing and accessory styles For each season
Interior decorator	Design programs/systems to suit the needs of clients
Landscape designer	Involved in drawings and producing cartoons
Graphic designer	Assist clients in choosing colour schemes And furnishings
Computer programmer	Involved in development of products mass produced by industry
Architect	Design artworks and layouts for material which is to be used in print or film

Thinking Like a Designer

If you intend to become as successful as you can in this subject, and you wish to produce products that are solving the problem, you must first start to think like a designer.

How do they think?

Designers think outside the square!

What does this mean?

This means they don't always follow the norm, that is, they don't all think the same. Imagine if we lived in a world where by every designer thought identically. All the solutions to all the problems would look identical! All clothes and cars would be the same. How boring! So it is vital that each person thinks individually. Each person's thoughts must also test the normal boundaries of thinking. That means we must take a new perspective on every situation, and try to look at it from varied angles, until we come up with the best design solution.

This is known as lateral thinking.

Vertical thinking

Looking for the right approach

Rightness

Proceeds if there is a direction

Is analytical

Is sequential

One must be correct at every step

Uses negative to block off certain pathways

Excludes what is irrelevant

Fixed categories/labels

Explores most likely paths

Is a finite process

Lateral thinking

Looking for as many approaches as possible

Richness

Proceeds to generate direction

Is provocative

Can make jumps

One does not have to be correct at every step

There is no negative

Welcomes chance intrusions

Labels may change

Explores least likely paths

Is a probabilistic process

On the following pages are some lateral thinking exercises to try to help you get started becoming a designer.






3. How do we do it?

When a true designer sits down to solve a problem, he/she does not have a pre-conceived idea of what the exact finished product will look like. Instead, they have a vision of what they need the product to do, what problems they need it to solve, then follow the DESIGN PROCESS until they produce a product that meets their required needs.



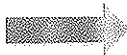

Generally, the design process is made up of the following stages:

1. **Design Situation/Need** – a statement that describes the problem that your design will fulfill.
2. **Design Brief** – a statement that describes what is required from you as a designer.
3. **Analysis of the Brief** – your statement that describes how you will solve the brief problem. You will include details about what you will need to do, skills you will need to do it as well as any limitations on the design process (such as; time, resources). *Limitations and Criteria for Success*
4. **Research** – use the internet, books and other sources to research valid information about your design. These sources must be referenced.
5. **Design Ideas** – your ideas for your design. Sketch ideas and write a few points about what is good and bad about each design.
6. **Design Solution/Final Design** – choose the design that best solves the design brief and explain why you chose it over the others.
7. **Evaluation** – write about how your design meets the criteria in the design brief and say whether your design meets the design need. Suggest positive and negative aspects of your design or your design process and what you would change if you could do it again.

Design Process - identify

Identification		Design Problem	
		Design Brief	
Preparation		Limitations	
		Criteria for success	
Investigation		Research	
		Concept ideas	
Construction		Development of ideas	
		Final idea	
		Production	
Justification		Evaluation	

Design Process - Apply (Homburger)

Identification		Design Problem	
		Design Brief	
Preparation		Limitations	
		Criteria for success	
Investigation		Research	
		Concept ideas	
Construction		Development of ideas	
		Final idea	
		Production	
Justification		Evaluation	

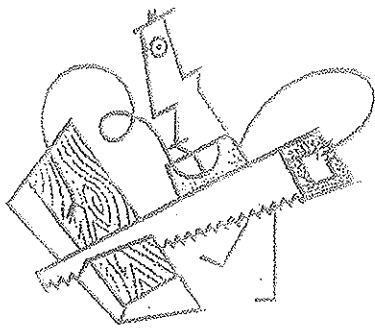
RAPPING the design process

To be a good rapper, you need to be able to use words that rhyme, eg
cat, hat, sat.

Write as many words as you can think of which rhyme with:

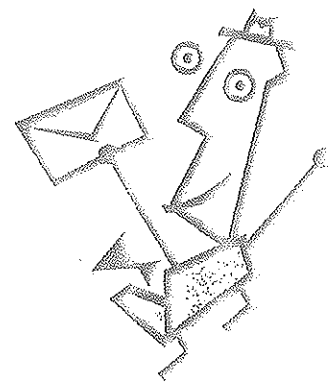
said _____
school _____
heart _____
week _____
top _____

Now, use your rhyming skills and finish off these raps! The words you need are in the box at the bottom of the page.



Here's some advice before you _____
There are a few things you should take to heart
Clarify the problem, and identify the _____
So your design will be _____ indeed.
Work out what you need for _____ and skill
But you can't _____ or take a rest until
You _____ and research on the 'net
So your ideas will be as _____ as they can get.

Get your thoughts together then decide on a _____
To find the _____! Yes, you can!
Then follow out your plan - _____ phase
Use your tools and resources in creative ways.
Now you've done it! You've made a great _____
While following the process all of the time.
Finally you have to think and _____
Whether your design was poor, average or great!



evaluate	resources	good	investigate
design	implementation	start	
relax	need	solution	fine

Mark / Comment	This page may be photocopied for classroom use. Literacy Works Copyright © 2000	26
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AESTHETICS

shape, proportion, pattern, texture, colour, style

Cost

of the product due to labour, materials, profit margin

Copyright

ownership rights of a design

Ergonomics

how comfortable the product is when used by humans

Safety

health issues related to the product

Size & Scale

capacity and proportion

FUNCTION

does the project work as intended?

Environment

impacts of a product on the natural & man-made environments

Ethics

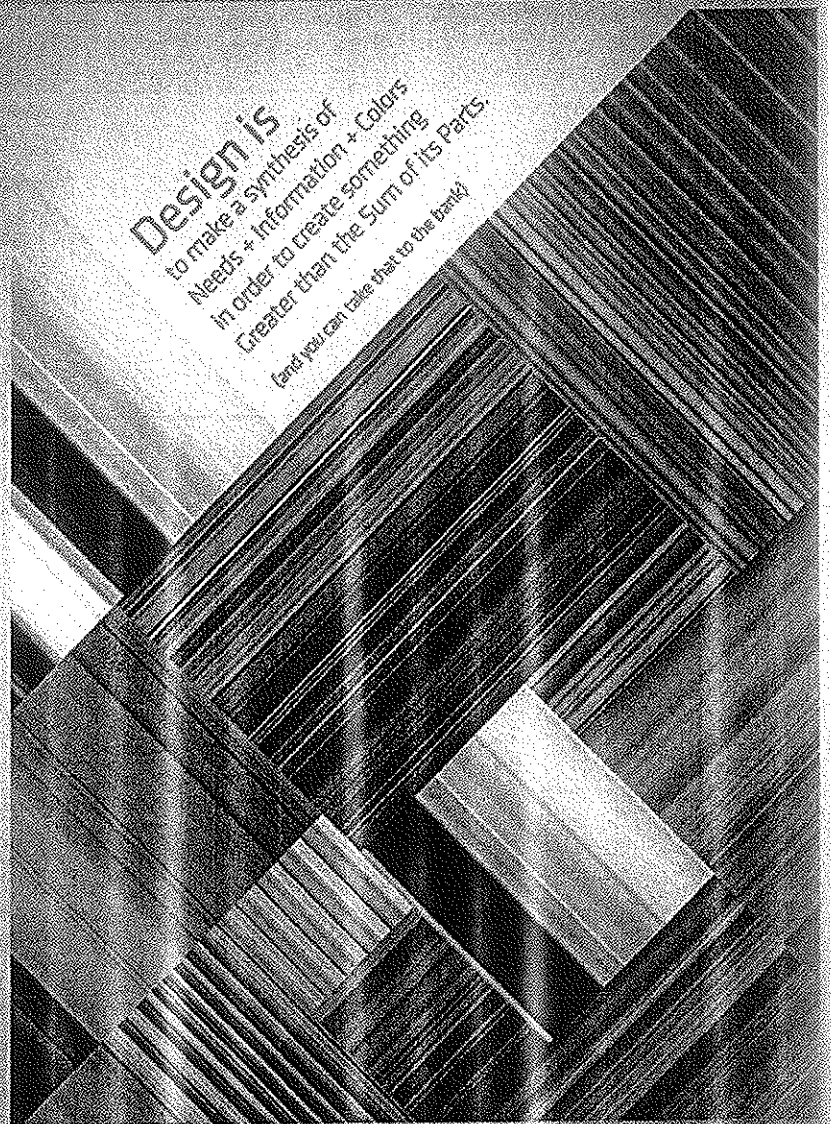
difference between what is right & wrong

Legislation

laws that impact the design and use of a product

Socio-Cultural

impact of a product on society and culture



Design is
to make a synthesis of
Needs + Information + Colors
In order to create something
Greater than the Sum of its Parts.
(and you can take that to the bank)

DESIGN is everything. EVERYTHING!

Paul Rand

Great design is all about the details. With innovative material selection, sensible construction techniques and modern aesthetics, one can craft a unique design language that sets a new standard.

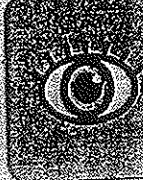
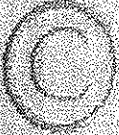




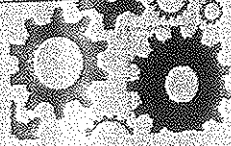

Roi James

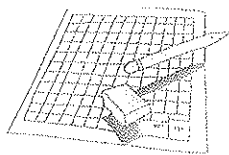
Design is a plan for arranging elements in such a way as to best accomplish a particular purpose.

Charles Eames



Factors Affecting Design

Factor	Match terms by drawing a line across	Definition	Image of Factor
Function		<ul style="list-style-type: none"> ▪ Describes the visual quality of something ▪ Pleasing in appearance ▪ Relating to beauty and to what is beautiful 	
Aesthetics		<ul style="list-style-type: none"> ▪ A form of protection provided by the law 	
Scale		<ul style="list-style-type: none"> ▪ The total spent for goods or services including money, time and labour ▪ Monetary value 	
Environmental		<ul style="list-style-type: none"> ▪ Relative magnitude ▪ The ratio between the size of something and a representation of it 	
Cost		<ul style="list-style-type: none"> ▪ Outside influences ▪ Culture or audience 	
Socio-Cultural		<ul style="list-style-type: none"> ▪ Product is designed to appeal to certain moral or socially acceptable principles 	
Ethical		<ul style="list-style-type: none"> ▪ What something is used for ▪ The actions and activities assigned or required or expected 	
Copyright		<ul style="list-style-type: none"> ▪ Concerned with the ecological effects of altering the environment – 'environmental pollution' 	



Your Design Brief

You have been employed by company to make one of the following products. You must write a design brief using the pages in this unit to help you. Your teacher will help you decide which product you will be making.

Apron:

Design Situation: Kieran and Joanne are entering a cooking show on television, *My Kitchen Rules*. They are very messy cooks in the kitchen.

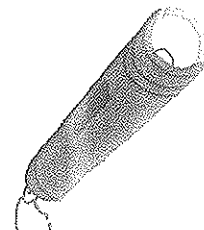
Design Brief: Design an apron that both Kieran and Joanne can use during the filming of the TV show and that could be sold in shops if they win the competition.



Torch:

Design Situation: Joshua and Chris share a bedroom. Joshua likes to go straight to sleep while Chris likes to read his book at bedtime.

Design Brief: Design a torch that Chris could use to read that won't be too bright for Joshua and keep him awake.



Design Situation Damien is a 3 year old boy who likes playing with wooden cars and trains Michelle, his 4 year old sister likes playing with them, too

Design Brief:

LIMITATIONS

Limitation: A constraint or a restriction.

You are required to design and construct a short film that is between 5-10 minutes in length. It must be targeted at children between the ages of 5-8. The short film must be about Safety in the Workshop and be rated G.

Identify and Describe FOUR limitations or boundaries that you must consider in order to produce the most effective product.

1. _____

2. _____

3.

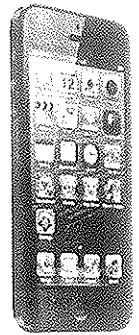
4.

How do limitations improve design?

Criteria for Success

A criterion is a standard against which something is judged. The plural of criterion is criteria. In every design project, you are required to come up with a list of 4 or 5 criterion (characteristics/features) that your design needs to have in order for it to successfully meet the design need. At the end of your project, you will evaluate your product against this pre-determined criteria to determine whether or not the design is good/bad.

The iPhone is a recently developed product by Apple. Identify and Describe FOUR criterion that the Apple company would have determined prior to developing this product.



Criterion 1:

Criterion 2:

Criterion 3:

Criterion 4:

Evaluate

All websites should be easy to read and clear in their design. Evaluate your school's website against these 4 criteria:

1. Content of the website is up-to-date and relevant to the school community.
2. The fonts are large and easy-to-read, with clear, contrasting colours.
3. Pages are easy to navigate and search - it is easy to find what you need.
4. Pages load quickly (not too many graphics on each page).

Introduction

Criterion 1 (Include an Example)

Criterion 2 (Include an Example)

Conclusion

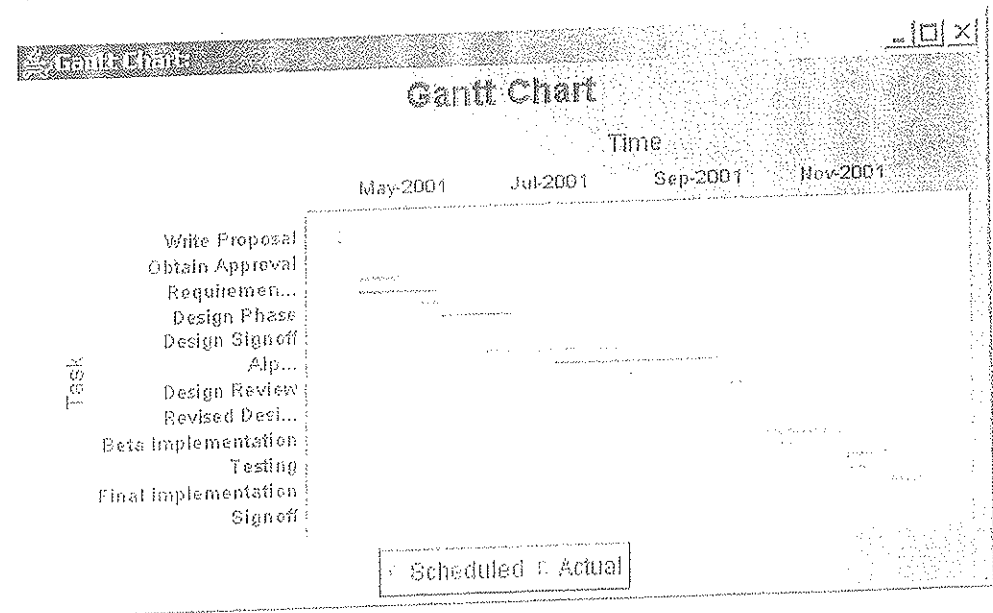
Tools For Designing

PNI Chart

Positive	Negative	Interesting

PNI charts are used to assess the positive and negative aspects of possible design solutions, existing solutions and final product. Basically they help you in your decision making process.

Gantt Chart



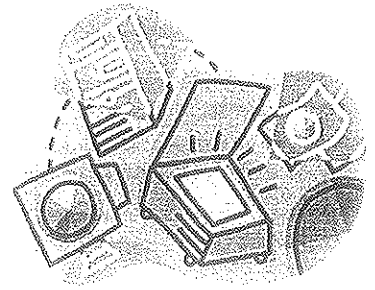
Gantt charts are used to manage projects development and realization stages. They help plan ahead, particularly in the time and actions needed areas. Usually a chart will display the time planned (scheduled) vs. the time taken (actual).

Video: Designing Toys

Listen carefully to the video and fill in the blank spaces.

1. The design concept must satisfy a client's _____.
2. Sometimes a new concept will generate a new _____.
3. When a new toy is being launched, the people that should be researched are _____.
4. Research can be carried out by _____.
5. Once the design brief has been worked out, the designer begins to _____.
6. A model is constructed in order to _____.
7. Before the tools can be set up for manufacturing, the drawings and models must be fully _____.
8. In order to accurately shape parts of a wooden toy, a manufacturer may build a _____.
9. All designs for toys must be tested for _____.
10. Design doesn't happen once. E _____ of a design must be carried out at very stage.
11. The locking mechanism of the toy oven was redesigned in order to _____.
12. Drawings were prepared of the changes made to the toy oven by measuring sizes off the _____.
13. In order to broaden its appeal, the bath time toy was _____.

Technology Mandatory Review

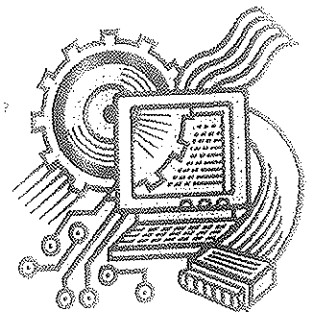
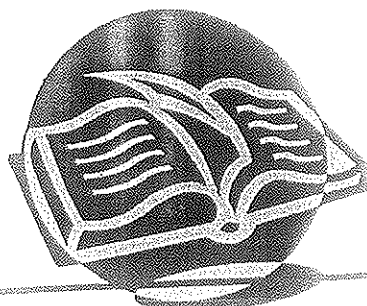
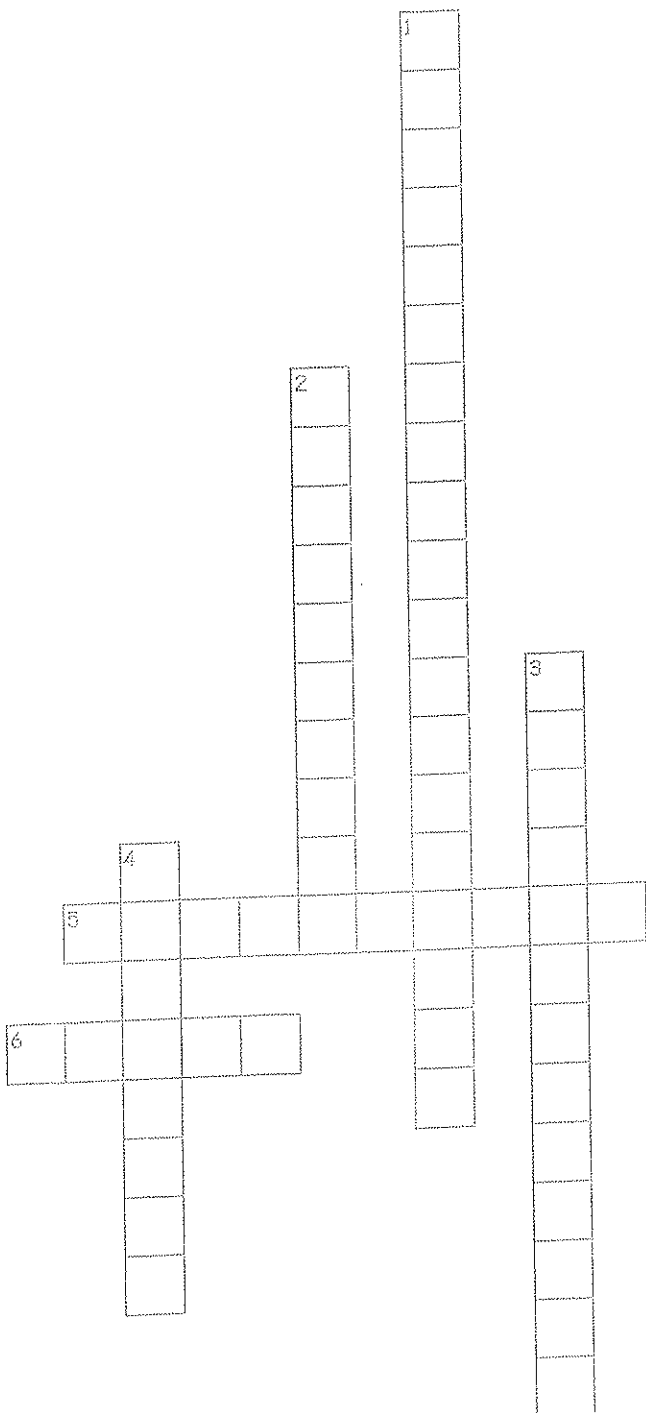


Across

5. The tools, machines, processes and systems we use when designing
6. The first drawing step of the design process

Down

1. The subject that deals with finding solutions to meet people's needs.
2. The design stage where strengths and weaknesses are identified
3. The step by step approach to problem solving
4. The design step where you find information to help you produce a successful design



4.1 Occupational Health and Safety

Occupational Health and Safety (OH&S) is about ensuring that all is done within our power to remain safe while working and learning at Clancy Catholic College. Before any prototypes can be developed, students must prove to teachers that they know how to work safely in a shared environment and can demonstrate their knowledge in a practical way. As such students are asked to sign the below document after discussion with their parents and teacher, to ensure that correct training, testing and safety precaution are being taken when conducting practical work.

4.1.1 Technology and Applied Studies Code of Safety

I,, agree to the following Occupational Health and Safety rules to ensure that my peers, teachers and I remain safe in learning at Clancy Catholic College.

- Shoes with a solid sole and firm leather (or synthetic leather) uppers will be worn in a practical workshop. I understand that if I am wearing sneaker or any form of sports shoe that I will not be allowed to do practical work.
- Personal Protective Equipment (PPE) for clothing (apron) and the eyes (goggles) supplied by the school will be worn at all times when in the “dirty” practical workshop environment or when instructed by a teacher.
- PPE such as ear muffs and gloves will be worn at appropriate times when instructed by the teacher.
- I will not use any tool or piece of equipment that I have not been instructed to use, or have been trained in, by my teacher.
- I will report any tool that has been damaged or I feel is not operating correctly immediately to the teacher.
- I will follow all classroom rules and instruction of the teacher.
- If I have any doubts about any piece of equipment I will ask the teacher for more instruction.

.....
(Signature)



7. Reference List

Whenever a project is undertaken, we need to write down where we get our information from to acknowledge the work of other designer. While original ideas would have been developed, it is essential to explain where the inspiration came from to avoid being called a cheat or accused of plagiarism (which can get you a big fat ZERO for in any school assignment!)

To reference a book you must list ...

Author's Surname, Initial. (Date of publication). *Book Title*. Publisher, city of Publication.

To reference an Internet site you must ...

- Name of site.
- Web address.
- Date site was viewed.
- Information taken of the web pages.

Now teachers know that you must have looked at some books or websites to get plans and ideas for your project ... so write them down so that you do not get in trouble! The following are some of the references that teachers have used in creating this booklet. See if you can label the different components of the reference.

Delbridge, A., et al. (1996). *The Macquarie Dictionary*. Second Edition. The Macquarie Library, Macquarie University, NSW.

IDEO
www.ideo.com
12/01/2006

Ideas used in regards to understanding the design process.

Literacy Works. (2000). *Design & Technology Stage 5*. Literacy Works, Marrickville West, NSW.