

Starters and Plenaries

for GCSE (9–1) AQA DT 3.3: Core Design Principles

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Teacher's Introduction

This resource contains 34 starters and plenaries which concisely cover the 2017 specification for AQA (8552) GCSE DT 3.3.1–2 and 3.3.4–6: Core Designing and Making Principles. The starters in this resource offer activities which will engage the students in the lesson following a break, or provide an opportunity for students to transition from a break into a lesson by recapping on previous work. The plenaries within this resource can be used to finish a lesson and, therefore, ensure that learning occurs right up to the end of the lesson. The types of activity are varied – from written communication and extracting information from text, to drawing, modelling and discussion-based activities. This is to help the activities appeal to a wide range of learning styles and keep them interesting and engaging, and to practise the wide range of skills that Design and Technology students need to demonstrate in their coursework and exams.

How to use this resource

A cross-reference table has been provided as a useful tool for lesson planning. It links each activity to the specification points it covers, and also identifies which activities are considered starters and which are considered plenaries. The identification of each activity as a starter or plenary is only a suggestion, and teachers might find that some of the activities are interchangeable.

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Register your email address to receive any future free updates* made to this resource or other DT resources your school has purchased, and details of any promotions for your subject.

* resulting from minor specification changes, suggestions from teachers and peer reviews, or occasional errors reported by customers

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Extra challenges!

Extra challenges have been provided for some of the activities. These can be used as activity extensions (to further challenge higher-ability students), as short plenary activities or even as homework tasks.

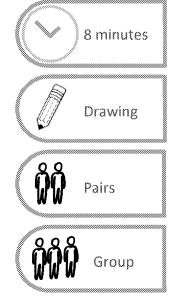
Equipment

Due to the varied and creative nature of the activities in this pack, there are some activities which require resources such as drawing materials, scissors, glue and access to the Internet. Any resources that are needed are indicated in an equipment list in the teacher's notes. This helps keeps teachers prepared and organised.

Icons

The icons featured on each worksheet are designed to give the teacher (and the student) some key information about the activity at a glance. The icons indicate the time the students have to spend on the activity, whether it is a drawing activity and what configuration the class will be in for the activity (group/pair/individual).

- **Time** the activities in this pack are designed to take 10 minutes in total, including time for feedback and answers. The time that students have to complete the activity is indicated by the time icon on the right-hand side of each worksheet; for instance, the time icon to the left of this page shows that students should spend eight minutes on the activity. This does not include feedback time, which would be two minutes in this case. Recommended feedback time is indicated in the teacher's notes table for each activity.
- **Drawing** drawing tasks have been included in order to develop a design-and-technology relevant skill set. The drawing tasks are indicated using the drawing icon.
- Class configuration a range of activities has been created in this resource which incorporates independent, paired and grouped work and which will be engaging for the students. The varied nature of the activities provides an opportunity for a range of learning styles and levels. The tasks that have been suggested for groups or pairs are indicated using the icons to the right. If the activity doesn't have an icon indicating a group or a pair then it is suggested to be completed individually.



October 2018

Specification Cross Referen

This table will enable you to pick and choose starters or plenaries relevant to the teaching. While each activity has been selected as either a starter or a plenary, yo starter and plenary tasks may be interchangeable (depending on how you teach it is at the teacher's discretion when to use each task.

Speci	fication reference	Activity
3.3.1 Investigation primary and secondary d	Use primary and secondary data to understand client and/or user needs How to write a design brief	Activity 1: Primary and Secondary Rese Activity 2: Primary Research – Focus Go Activity 3: Primary Research – User Into Activity 6: Primary and Secondary Rese Primary and Secondary Data Activity 6: Primary and Secondary Data Activity 7: Primary and Secondary Data Activity 8: Priorities – What Type of De Activity 9: Target Market – Identify the
	and produce a design and manufacturing specification Carry out investigations in order to identify problems and needs	Consumer Activity 10: Design Brief – Brief Practic Activity 11: Create a Manufacturing Sp Activity 12: Modifying a Brief
3.3.2 Environmer challenge	ntal, social and economic	Activity 13: Product [Re]design
3.3.3 The work of	f others	Activity 14: The Work of Others – Philip Activity 15: The Work of Others – Willia Activity 16: The Work of Others – Brans Activity 17: The Work of Others – Unde
2245	Generate imaginative and creative design ideas using a range of different design strategies	Activity 18: Design Strategies – Collabo Activity 19: Design Strategies – User-ce Activity 20: Design Strategies – A Systen Activity 21: Design Strategies: The Itera Activity 22: Design Strategies: Avoiding
3.3.4 Design strategies	Explore and develop their own ideas	Activity 23: Design Strategies: Quick Dr Activity 24: Design Strategies – Design Activity 25: Sketch/Model/Test* *Can also be used to cover specificatio (Communation of Design Ideas: Model Activity Sesign Strategies – Evaluation
3.3.5 Communication of design ide		Activity 27: Communication of Design Activity 28: Communication of Design
3.3.6 Prototype devolute and components		Activity 29: Prototype Development Activity 30: Match the Materials and St
3.3.8 Tolerances + 3.3.9 Material management	Cut materials efficiently and minimise waste Use appropriate marking- out methods, data points and coordinates	Activity 31: Material Management and
3.3.10 Specialist t 3.3.11 Specialist techniques and	Surface Treatments and	Activity 32: Specialist Tools and Equipm Activity 33: Specialist Techniques and I
processes	finishes	Activity 34: Surface Treatments and Fir



Activity 1 – Primary and Second

Teacher's notes and answers

	Starter Activity: Primary and Se Research – Sort the Card
Aim of the activity	Students to learn which methods of research are primary research ones are secondary.
Teacher's instructions	Photocopy the activity on the next and give one copy to students eight minutes to complete one activity. Spend two minutes to complete one activity. Spend two minutes to complete one activity.
Students'	Studants and work in pairs to sort the cards into piles of princes, either by labelling the cards or by cutting outpiles.

Answers

Primary research:

- Interview
- Questionnaire
- Visit
- Survey
- Testing
- **Experiments**
- Disassembly
- **Product analysis**
- Observations of users and materials
- Focus groups

Secondary research:

- Magazine
- Internet
- **Books**
- Statistics
- TV/radio
- Other designers



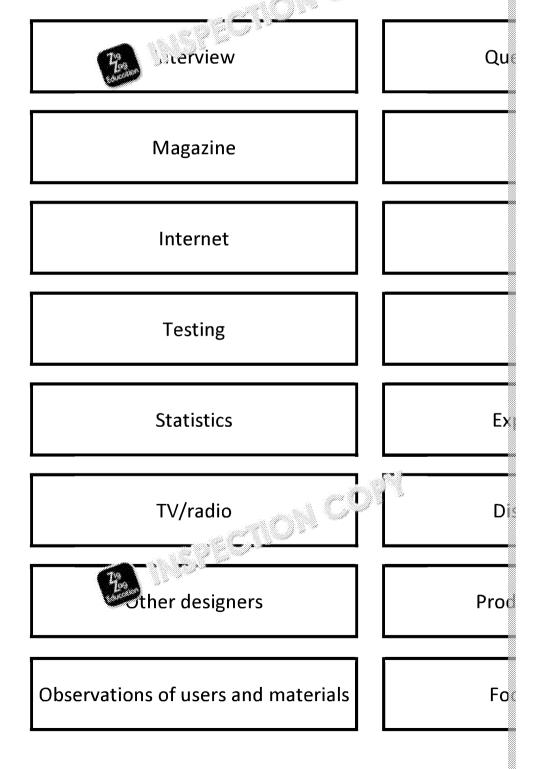


Primary and Secondary Res Sort the Cards

Cut out the cards below and sort them into two piles — one pile for primary resemethods and one pile for secondary research methods/sources.

Primary research is research that has been completed by you. You are the one actively gathering the data and making observations.

Secondary research is research and data that has been gathered by someone else. That someone else could be an expert, a government a single of information are reliable.





Activity 2 – Primary Research:

Teacher's notes and answers

	Plenary Activity: Focus Group F
Aim of the activity	To allow students to realise the importance of consumer opin product design and refining process.
Teacher's instructions	Photocopy the activity on the next page and give one copy to students eight minutes to complete the covity. Spend two medians back and going through set declarations.
Students' task	Students should vaken pairs to create a list of questions to ge focus growth a view to improving and developing a new detections.

Answers Questions to ask the focus group:

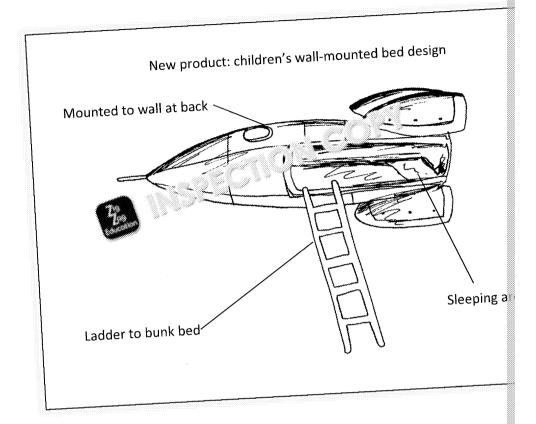
- 1. What do you like about this product?
- 2. Is there anything you would change about the product?
- 3. What do you think about the price point of £180 for this product? Is it too h would it make you question the quality of the product?
- 4. If you were buying a bed for your child, would you prefer to buy a floor-base explain your answer.
- 5. What do you think the age range of children who would appreciate this bed
- 6. Would you buy this product? Please explain your answer.





Focus Group Activit

A focus group is ready to review a brand-new product (pictured below). Design a six questions that will help to determine whether the product will sell well.



Questions to ask the focus group:





Activity 3 – Primary Res User Interviews

Teacher's notes and answers

	Starter Activity: User Interv
Aim of the activity	To help students to look for user insights and practise applying improve it.
Teacher's instructions	Provide a range of products the cst of res can choose from to list below for ideas of such as copyrovide.) Split the class into the next page and it is one copy to each pair of students. Give complete in security. Spend two minutes at the end of this set it is uninstudent answers.
Students' task	Students should form pairs. One of the pair chooses a product other asks questions about it, to find out what the user likes a product. Some questions are given, but the interviewer is required questions to ask the user. At the end of the exercise the stude least one feature or aspect that they would redesign to impropinion of the user.





User Interviews

It is important to get user feedback to find out how to improve an existing produ prototype and also to analyse similar or competitors' products.

Work in pairs. One of the pair chooses a product from a list specified by your teal and becomes the product 'user'. The other asks questions about it, to find out w the user likes and dislikes about the product.

Ask the questions that have been provided for you below, and take notes on the answers and insights given by your user. Then, come up with two questions of your own, write them down, ask your questions to your result in a nate down their insign and answers.

What insights did you get? " Feature you would redesign.



Questions asked in user interview:

- What do you like about the product?
- What do you dislike about the product?
- Do you think the product functions well, adaquately or poorly? Pl explain your answer.
- Do you think the aesthetics are appealing, appauling or are you indifferent to it? Please explain your answer.

 -
 -
- 8

One function or feature that I would redesign/improve:	
One function or feature that I would redesign/improve:	
One function or feature that I would redesign/improve:	

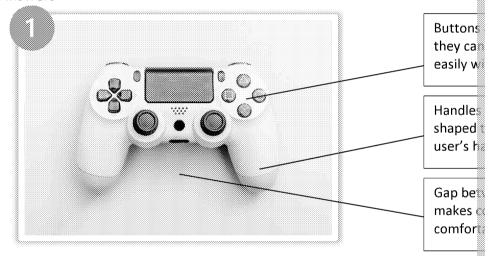


Activity 4 – Primary and Second Ergonomics

Teacher's notes and answers

	Starter Activity: Ergonomi
Aim of the activity	To help students understand what is meant by ergonomics an features.
Teacher's instructions	Photocopy the activity on the rext page and give one copy to eight minutes to compact the activity. Spend two minutes at a back and going through student answers.
Students'	S t ් ந நிலுd analyse the products given to decide which o designed. They should record their observations.

Answers



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Ergonomics

Ergonomics is the study of how design affects humans. Products that consider ergonomic factors are designed with the human body in mind, with the aim of maximising comfort and minimising the strain experienced when using the product designed for the work environment often have ergonomic features beconfithe prolonged and repetitive nature of the use of the product. For instance, a hours a day needs to be comfortable and minimise strain for the user. Another exhave ergonomic features include products designed for gaming. Products such as and accessories often have ergonomic features because of the same prolonged (susage.

Consider the products below. Which one do well think is more ergonomically des





Activity 5 – Secondary Resear Analysis and Evaluati

Teacher's notes and answers

Star	ter Activity: Product Analysis an
Aim of the activity	To help students understand how to analyse a product.
Teacher's instructions	Photocopy the activity on the rexture seand give one copy to eight minutes to complete the activity. Spend two minutes at back and going time to great udent answers. There is also an extraplency of the first extension / homework task.
Students'	Stauents should analyse the product specified by answering the extra challenge they should identify the problem with glow-in

Answers

1. What are the positive aspects of the design?

- The design includes a guard for fingers to help grip garlic, prevent getting and to help protect the user from injury. This extra functionality is a positive
- The product is appealing aesthetically.
- The product can be washed easily because it is made of metal and plass
- The product is very cheap, and, therefore, is accessible to a wide range

2. What are the negative aspects of the design?

- The product is made in, and shipped from, China. This means it will have
- The product would be hard to recycle.
- The product is so cheap that a consumer might suspect quality/social is and workers being paid low wages.

3. Identify any ergonomic considerations that have been made.

- The product has an imprint to indicate how it should be held and to give grip when holding the product.
- The hand guard makes the product more comfortable and safer to use

4. What material is it made of?

- Plastic (frame, hand guard and handle)
- Stainless steel (grate)

5. Who is the target mark to the target make you think it will appeal to the target make

The retain the people who like to cook and and have time to prepare the accurts aged 30–70.



Product Analysis and Eva

It is important to look at exisiting products and designers during the research phof any design project. It can give you inspiration, make you aware of competition help you avoid mistakes and improve on the products that are on the market. To analyse and evaluate an existing product, you have to research it and ask yourse questions about the product. Consider the garlic grater below. Analyse the producting the example questions provided.

Pro	duct analysis questions	
1.	What are the positive aspects of the design?	
	13	
ว	What are the possible aspects of the design?	
2.	What are the negative aspects of the design?	
2	Identify any arrangemic considerations that have been made	
3.	Identify any ergonomic considerations that have been made	ε.
4.	What material is it made of?	
٦.	what material is it made or:	
5.	Who is the target market? Yany to you think it will appeal to	n the target ma
J.	Who is the target market any to god think it will appear to	o the target ma

Extra challenge!

Identify the problem with the product to the right.





Activity 6 – Primary and Second of Anthropometric Data and F

Teacher's notes and answers

Starter Activity: Analysing Anthropo	
Aim of the activity	To help students understand how anthropometric data is used industry.
Teacher's instructions	Photocopy the activity on the rext page and give one copy to eight minutes to compage to a activity. Spend two minutes at back and going through student answers.
Students' task	Sit is nould work in pairs to analyse the anthropometric d

Answers

a) If three people are in the 5th percentile, how many are in the 95th percentile **3**

b) Which of the following shows the average height? (Please circle)

5th percentile

50th percentile

95th percentile

c) 'The shape of the graph is called normal distribution.' Is this statement true (Please circle)



False

d) Why is it important to design for the 50th percentile? **The product would fit the majority of people.**

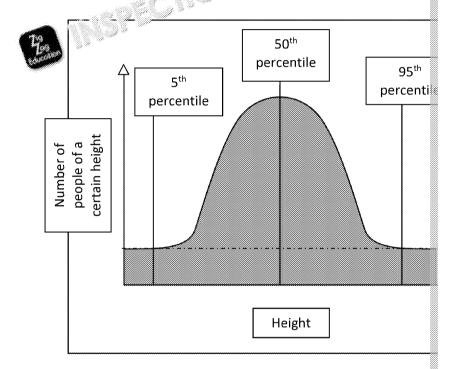




Anthropometric Dat

Anthropometric data is the study of the measurements and movement of human is important to consider the measurements of humans when designing products make sure they are the appropriate size.

Humans come in all shapes and sizes. There will obviously be differences between size of babies, children, adults and even elderly people, but within the categories there are differences. For instance, some adults can be really short, while others be really tall. There will be an average – the measurement that most people are there will always be exceptions and people that have smaller neasurements and measurements. The smallest measurements are calle / t 5th percentile and the The measurements that are the 50th percentile ar "tile measurements that most shows the heights of a group of peace of sider the graph and answer the quest



- If three people are in the 5th percentile, how many are in the 95th percentile
- Which of the following shows the average height? (Please circle)

5th percentile

50th percentile

95th percentile

the graph is called normal distribution.' Is this statement true c) True

False

Why is it important to design for the 50th percentile?



Activity 7 – Primary and Secon Analysing Responses to User Qu

Teacher's notes and answers

	Starter Activity: Analysing C
Aim of the activity	To help students understand how data collated from complete analysed and used to help write a design by left that will appeal
Teacher's instructions	Photocopy the activity on the rext page and give one copy to eight minutes to compare the activity. Spend two minutes at a back and going this light student answers.
Students'	Sit is should consider the three graphs showing data gather quastionnaires and use the information to write a product brief

Answers

Design brief:

Design a backpack-style bag, in a monochrome colour scheme, that has multiple for organising the bag's contents. The bag should be durable enough for everyday should be between £10 and £40.

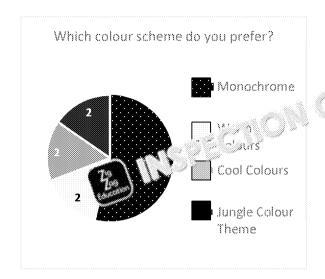


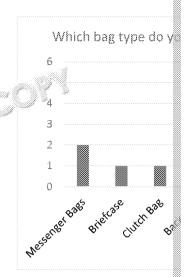


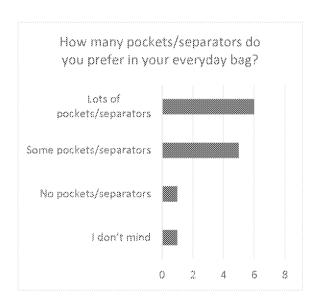
Analysing Data

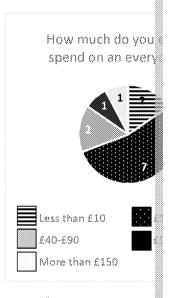
Consider the charts below.

A group of users were asked a series of questions to find out their preferences in regard to a bag for everyday use. Using this information, write a brief for a bag for everyday use.









Desigr	า Br	ief

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Activity 8 – Priorities: Cons Own Needs

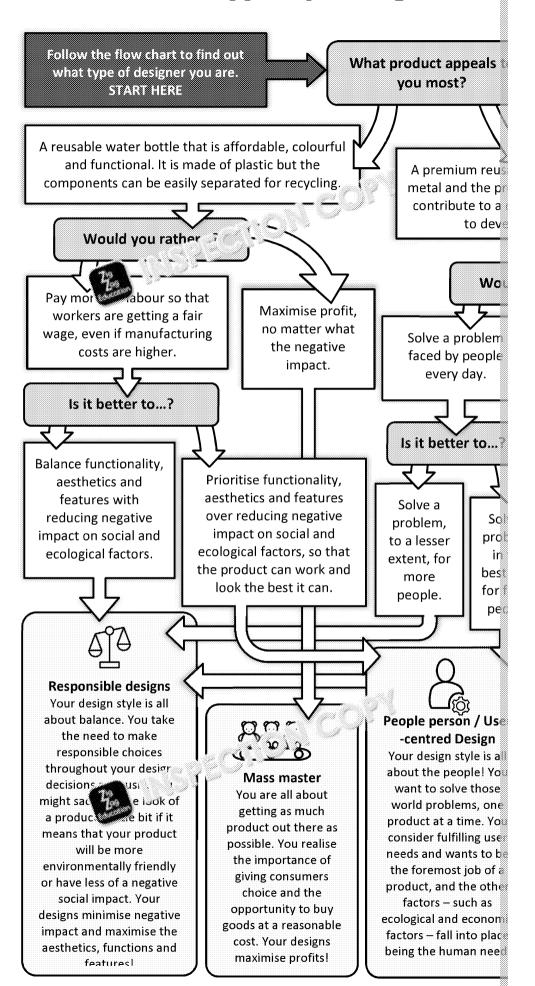
Teacher's notes and answers

Stai	ter Activity: What Type of Design
Aim of the activity	To help students understand what type of designer they are a social and economic needs with functions and aesthetics.
Teacher's instructions	Photocopy the activity on the rext page and give one copy to eight minutes to compare the activity. Spend two minutes at back and going through student answers.
Students' task	Site is should follow the flow chart to find out what type of





What Type of Designer ar





Activity 9 – Target Market: Idental and Wants of the Consu

Teacher's notes and answers

Starte	er Activity: Identify the Needs an Consumer
Aim of the activity	To help students identify the need as waits of consumers.
Teacher's instructions	Photocopy the and or in next page and give one copy to eight min the complete the activity. Spend two minutes at being repoing through student answers.
Students'	Students should identify the needs and wants of a consumer b

Answers

Needs could include:

- Hidden storage
- Styled to fit into a domestic living room (as opposed to an office / a home office)
- Space to store a laptop
- Space to store crafting supplies
- Space for a printer

Wants could include:

- Cable management inbuilt into the desk to reduce clutter
- Minimal and elegant style with classic elegance
- Dividers and organisers in storage
- A storage solution for craft supplies that is visually appealing





Identify the Needs and War Consumer

Consider the consumer profile below. Identify the user needs and wants in regardesigning a work desk for their home. A 'need' in this context means something if a product didn't have it, the consumer wouldn't buy it. A 'want' means someth that might help persuade the consumer to buy the product, or to spend more mon it. Fulfilling consumers' wants and needs means that your product is more like competition (similar products on the market).

Consumer Consumer

Nar ni , ii an

Ethnicity: Black British

Education: Undergraduate degree level

Occupation: Personal Assistant

Income: £23,000 per year

Household size: Small, one-bedroom flat, close

to the city centre.

Personality traits: Organised, punctual, assertive and confident independent but values family.

What they are looking for in a desk:

'I would like a desk that is, foremost, functional. I would like it storage and dividers to help keep my notes and stationery tidy organised. I would like to be able to tid any hing away so the is clear and clutter free. I have the small flat and, therefore be in my living room a wind the desk to look like it's part of the and not be to see made. I would describe my style as minimal and put of classic elegance. I need to use my desk for work use a laptop. I would also like to use it for my scrapbooking prowhich I often use a printer, scrap paper and fabric, photography glue and colourful tape.'



Activity 10 – Design Brief: W

Teacher's notes and answers

	Plenary Activity: Brief Prac
Aim of the activity	To allow students to develop skills of considering the needs, we consumer.
Teacher's instructions	Photocopy the activity on the next page and give one copy to eight minutes to complete the activity and two minutes at back and going through studen ar was. The extra challenge extension or as a home, which ask.
Students' task	Students '

Answers	5
---------	---

Football trainers	Design a pair of shoes suitable for intensive sports. Th
 	and young adults. They should be mid range in price in
! !	that market.
Waterproof camera	Design a bag which fits an SLR camera and is totally w
bag	to make full use of the camera through the bag. It sho
 	who like travel, explore and take part in outdoor spor
iWatch	Design a wearable technology product which can be us
 	call and use apps. It should appeal to young profession
1 	design.

Extra challenge!

Glamping pod	Design a small, luxurious glamping pod for 2–3 people
1	amenities needed for a weekend away. It should inclu
! !	sleeping area and an area to socialise in. Use a natura
	sympathetic to the pod's surroundings.





Brief Practice

Write a design brief for each of the products below. In your briefs you could referenterials, cost, target market and specific functions that the products will need to consider.

Desig Extra challenge!



Activity 1 1 – Manufacturing S

Teacher's notes and answers

	Plenary Activity: Create a Manu Specification
Aim of the activity	Students to practise applying their knowledge of what information manufacturing specification.
Teacher's instructions	Photocopy the activity on the next and give one copy to eight minutes to complete the ctions. Spend two minutes at back and going the characteristics are new to see the complete the compl
Students'	Studers work individually to write a list of information in a control of specification, draw orthographic views of a givestandard compenents list for the product.

Answers

List of information required in a manufacturing specification:

- Line or technical drawing with measurements (orthographic view)
- Isometric view and/or exploded drawing
- Product description
- List of standard components
- Material specifications (what material to use)
- Manufacturing instructions and scale of production
- Costings
- Quality assurance

List of standard components: (Allow variations and sensible approximations)

- Approximately 20 nails
- One screw eye





Manufacturing Specification:

Plan a manufacturing specification for the bird feeder below. Write a list of information normally required on a manufacturing specification (e.g. materials a components, manufacturing processes used, costings). Sketch an orthographic verthe product and an isometric view of the product, and label any product features think may be useful for the manufacturer to know. Finally, make an approximate of the standard components used to make the birdfeeder.





Activity 12 – Modifying c

Teacher's notes and answers

	Starter Activity: Modifying a
Aim of the activity	Students to identify why a brief might be modified.
Teacher's instructions	Photocopy the activity on the next page and give one copy to eight minutes to complete the activity and two minutes at back and going through studen and will.
Students' task	Students to considerate and the feedbar make change of prexisting brief to help the new product app



Design a compact portable speaker. The speaker should be wireless and able to a phones and MP3 player devices via Bluetooth. The speaker should be able to be on a keyring. The speaker should be splashproof and durable enough for use out inspired by a tennis ball to celebrate Wimbledon. The speaker should come in a in the range of £8–£15.





Modifying a Brief

Sometimes a brief might need to be modified. This could be due to a range of reincluding new information about the target market's wants and needs, development technology, limitations on time and budget, etc. In this case the designer had existing brief for a design for a portable speaker but, after looking at some existing products and the user feedback for the products, the designer has decided to me

Consider the two existing products, the user feedback for them and the existing might be.

Existing Product A Exis Features: Features: Portable (tiny size) Portable Wired Wireless Can be used in the Can be attached to a keyring Suction cup to er User feedback: User feedback: Very small, very portable Portable Wireless Nice shape Good range of colours to choose from Can be used in the Convenient size, fits on keyring or bag hobbies) Wire is annoying and it breaks really easily Limited colours, Feels a bit cheap, very lightweight would prefer a ne Can get knocked Back can be a litt

Original brief:

Design a portable speaker. The speaker should be wired and able to connect to a player devices. The speaker should be inspired by a tennis ball to celebrate Wim of $\pm 8-\pm 15$.

New design brief:	



Activity 13 – Environmental, Economic Redesign Chal

Teacher's notes and answers

	Plenary Activity: Product 🗆 Re)
Aim of the activity	Students to gain an understanding of the environmental, social product and how to reduce the negative in pact.
Teacher's instructions	Photocopy the activity on the rext personal give one copy to eight minutes to complete a pactivity. Spend two minutes at back and going through student answers.
Students'	St. 'n choose a negative impact from the list, and redesigns its negative impact. The changes should be annotated and exp

Answers

Ideas for reducing negative impacts could include:

- Ecological impact
 - Make from metal/glass or, if plastic, use a bioplastic which will degrade recycled
 - Manufacture in the UK, or offset carbon footprint by planting trees
- Social impact
 - Manufacture in the UK or carefully consider which manufacturer in Chillington
 the company policies are
- Economical impact
 - Design bottle without a top, with a sports closure
 - Make the bottle smaller
 - Design to be made in one mould





Product [Re]design

Look at the reusable water bottle. The bottle is made from polycarbonate, as indicated by a number 7 recycling symbol on the bottom. A stamp at the bottom reveals that it was made in China.

Choose a negative impact from the list and redesign this product to improve its negative impact. Explain your changes. You have eight minutes to produce a quick sketch.



List of

- Ecological is
 - Made from isn't wide
 - Transport
 manufact
 carbon for
- Social impa
 - Made in a different la wages and allowed to
- Economical
 - Bottle with lid; using the increases cos

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Activity 14 – The Work of Philippe Starck

Teacher's notes and answers

Starte	r Activity: The Work of Others –
Aim of the activity	Students to explore and anlyse the work of Philippe Starck.
Teacher's instructions	Photocopy the activity on the rext region give one copy to eight minutes to complete activity. Provide the students w
Students'	Students Contine Philippe Starck designs provided. Find the Starck designs provided. Find the Starck designs provided. Find the Starck design and annotate functions and materials. Evaluate the design in the boxes provided the continuous challenge! Find images of products or objects that could
	by Philippe Starck's work.

- Access
- Drawin
- Scissor choosi

Equip

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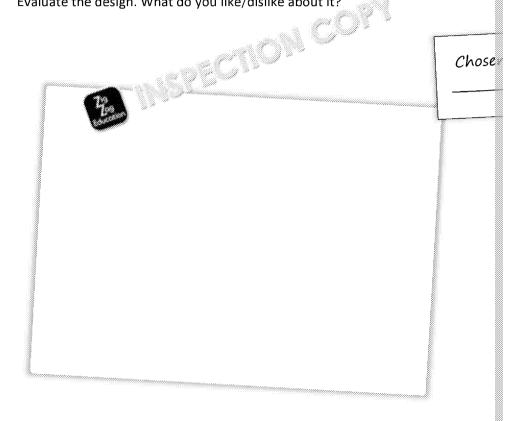
The Work of Others: Philipp

Find an image or draw a representation of one of Philippe Starck's designs below

- Juicy Salif
- **Ghost Chair**
- To'taime
- Gnome Attila

Label the image/drawing with the features, functions and material of the design

Evaluate the design. What do you like/dislike about it?



Likes: 	Dislikes:
- A	

_			
Evtra	chal	lenge	ı
EXUA	ullai	iense	ı

Find images of products or objects that could have inspired / been inspired



Activity 15 – The Work of William Morris

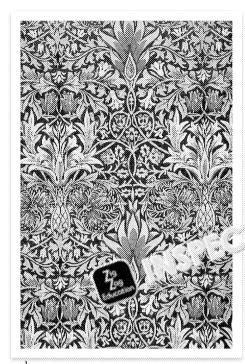
Teacher's notes and answers

	Starter Activity: Morris-inspired
Aim of the activity	Students to design a product for the living room inspired by the
Teacher's instructions	Photocopy the activity on the rext page and give one copy to eight minutes to compage activity. Spend two minutes at back and go activity atudent outcomes.
Students' task	Site in the complete this quick-sketch activity as a starter.





The Work of Others: Willian



The print pictured on the left is called 'Snakeshead'. It is a printed textile by William Morris, produced in 1876.

Using this image as inspiration, design a product for the living room which referent this style. Annotate and evaluate how you design has been inspired by the work below

Product ideas:

- Labor With inxture
- Gaming chair
- Remote holder
- Armchair
- Candle holder





Activity 16 – The Work of © Brand Styling

Teacher's notes and answers

Starter Activity: Innovative Hairdr		
Aim of the activity	Students to design a new hairdryer in the style of a well-know	
Teacher's instructions	Photocopy the activity on the rexture seand give one copy to eight minutes to complete security. Spend two minutes at back and going arrest security design work, bringing attention	
Students' task	St. ' 19 50 complete this quick-sketch activity as a starter.	





The Work of Others: Brand

Dyson is a leading company for vacuum cleaners. However, Dyson doesn't just d vacuum cleaners. It has diversified its product range to include washing machine airblade hand dryers, bladeless fans and, in 2016, Dyson launched a hairdryer! Design a new hairdryer in the style of a company of your choice. Fully annotate design idea. Company examples could include Braun, Apple and Alessi.



brand in the design.





Activity 17 – The Work of **Under Armour**

Teacher's notes and answers

	Starter Activity: Football Traine
Aim of the activity	In pairs, students to create a mood board to inspire a design for Under Armour with a view of becoming more familiar with this
Teacher's instructions	Split the class into pairs. Photo op the activity on the next papair of students. Provide is students with mood board mater magazines and catalogues. Give the students 10 minutes to co
Students'	S ເ ່ ກາວວາກake a mood board in pairs. The mood board sho fo coall trainer for Under Armour.

Equip

- Access (Unde
- Mood
- Scisso
- Glue/

suggestions for mood board materials

- Magazines
- Catalogues (IKEA, etc.) Fabric samples
- Plastic samples
- Images from the Internet Newspapers



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The Work of Others: Under

Under Armour is a sportswear-based clothing company. The brand emphasises howork, determination, willpower and innovation. Its mission is to 'Make All Athlete Better'. Under Armour's products are highly functional and focused on using innovative fabrics.

Create a mood board to inspire a new design of football trainer for Under Armou and materials and how these fit in with the overall brand ethos and aesthetic. Loo provided below to get you started. You may wish to further research this comparunderstanding of the brand.



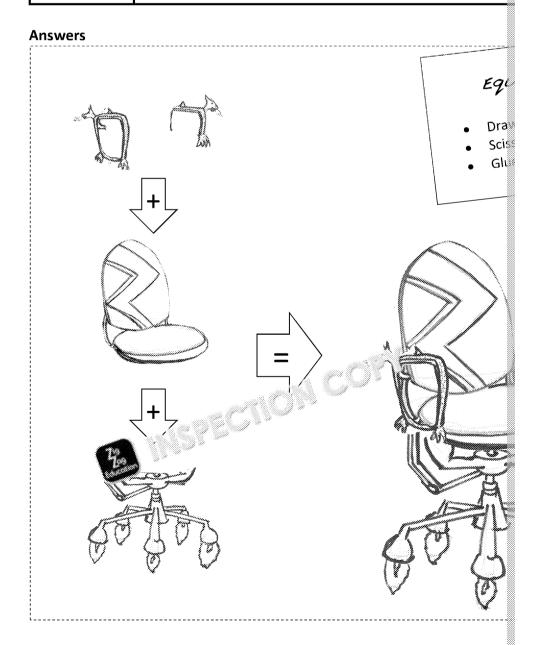




Activity 18 – Design Strategies:

Teacher's notes and answers

	Starter Activity: Collaborat
Aim of the activity	To help students practise collaboration in design.
Teacher's instructions	Split the class into groups of three. Photocopy the next three part of the chair to each person in the spin. Give the student design part of the activity. Spenation handes at the end cutting designs to make one design you would rather split the class smaller group lance variation, when you can leave out the arms and junder at the spin to the sp
Students' task	In 3,00ps of three, use the underlays provided to design part on the group should have a different part of the chair. After eventheir element of the design, the seat, and then the arms should base design to reveal a full design.





Design Strategies: Collabora

Use the underlay provided to design the base of the office chair. Each person in group should have a different part of the chair. After everyone has finished design their element of the design (you should spend about eight minutes designing), cut the seat and the arms and stick them onto the base design to reveal a full design seat should be stuck first and then the arms on top.



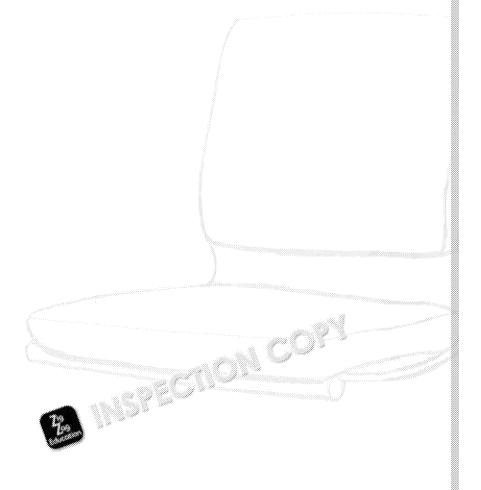




Design strategies: Collabora

Use the underlay provided to design the seat of the office chair. Each person in yearoup should have a different part of the chair. After everyone has finished design their element of the design (you should spend about eight minutes designing), cut the seat and the arms and stick them onto the base design to reveal a full design seat should be stuck first and then the arms on top.







Design Strategies: Collabora

Use the underlay provided to design the arms of the office chair. Each person in group should have a different part of the chair. After everyone has finished design their element of the design (you should spend about eight minutes designing), cut the seat and the arms and stick them onto the base design to reveal a full design seat should be stuck first and then the arms on top.







Activity 19 – Design Stra User-centred Desig

Teacher's notes and answers

	Starter Activity: User-centred
Aim of the activity	To help students understand how products are designed to fu
Teacher's instructions	Split the class into pairs. Photo op the activity on the next pair of students. Give me themse eight minutes to complete at the end of this significant feeding back and going through students.
Students'	St. 'n hould work in pairs to fill out the table with the use sowe.

Answers

Product profile:

A child's cup which will not spill when tipped or knocked over but that can be drunk releases when the cup is being drunk from.

User problem this design solves:

The rubber seal makes it less messy so it can be used by young children but also drinking in a way that is similar to a normal cup.

Product profile:

The BioLite CampStove is a portable camping stove designed for people in develocamping, hiking or entertaining outdoors. The technology used in this camping stoversion called HomeStove which is available at an affordable price in developing HomeStove uses 50% less wood for cooking than a traditional open-fire stove, and by the fire by 90%! A BioLite stove also generates electricity from the fire being user to charge a mobile phone, light or other chargeable device.

User problem this design solves:

The BioLite stove helps to light a family's home after dark or keep people connect business opportunities via mobile technology. The air quality in a house using a Bithat in a house using an open-fire stove. It also means that the stove is more enviopen fire because fewer carbon emissions are being gone at all. The small amount reduce the costs of cooking for families in develoging the aircries.

Product profile:

A Fitbit is wearable techniquy is at measures the user's heart rate, activity and significant into context by comparing it to statistics of the wider guide to which performance or health is good or needs improving. A use sessions.

User problem this design solves:

The information gathered by a Fitbit can be used to motivate the wearer to impround monitor sleeping patterns. Being able to share statistics and maps of running challenge themselves against family and friends and share achievements. This is user to keep improving their fitness and activity levels. Guided breathing session about breathing and heart rate levels.



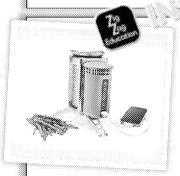
User-centred Desig

Some products are designed specifically to solve a human need. These products result of user-centred design. Consider the products below. Decide what human the product has been designed to solve.

Product profile:

A child's cup which will not spill when tipped or knocked over but that can be drunk from easily. The rubber seal only releases when the cup is being drunk from.

User problem this design solves:



Product Profile:

The BioLite CampStove is a portable camping stove of countries to use for camping, hiking or entertaining of this camping stove is also used in a bigger version call available at an affordable price in developing countries.

The BioLite HomeStove uses 50% less wood for cook stove, and reduces the smoke produced by the fire begenerates electricity from the fire being used for cook charge a mobile phone, light or other chargeable devices.

User problem this design solves:	

Product profile:

A Fitbit is wearable technology and sures the user's heart rate, activity and sleep. The app rolling of the Fitbit puts this information into context by compared to the user of the wider population to give the user a guide to whether performance or health is good or needs improving. A user can also follow guided breathing sessions.

User problem this design solves:	



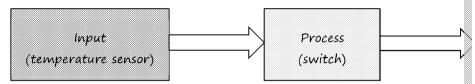
Activity 20 – Design Strategies Approach to Designis

Teacher's notes and answers

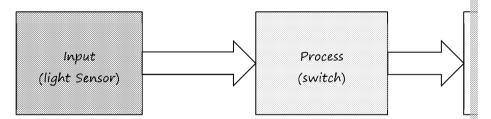
Plenary Activity: A Systems Approact	
Aim of the activity	To help students understand what a systems approach is and
Teacher's instructions	Photocopy the activity on the rext releand give one copy to eight minutes to complete activity. Spend two minutes at back and gold minutes at the student answers.
Students' task	Signature of the state of the s

Answers

Hair straightener:



Street Light:

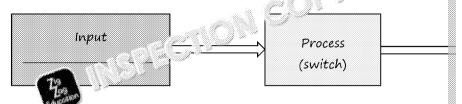




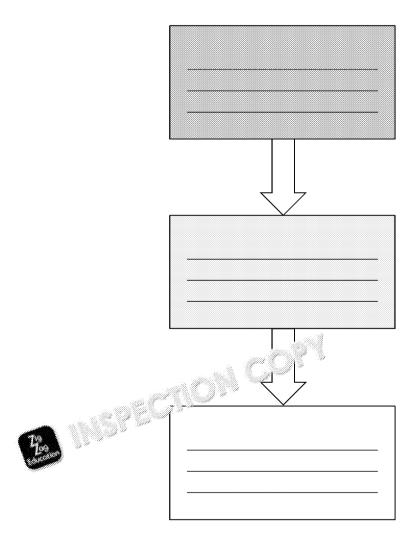
A Systems Approach to De

Some design ideas need to be communicated differently to fully describe their functionality and features. (Products that include systems and electronics, for instance.) It is important to communicate what the product does but also how it it. A systems approach to designing is a method of communicating this functional is essentially a flow chart which describes the input (what happens to make the part product does the thing) and the output (the thing a product does). Complete the

In this flow chart, a hair straightener has a light that turns on when the appliance should be used at. Fill in the systems diagram to reflect this functionality. The pro-



Street lights only turn on when it gets dark. This helps to save electricty an unnecessarily. Complete the systems diagram below, showing how street



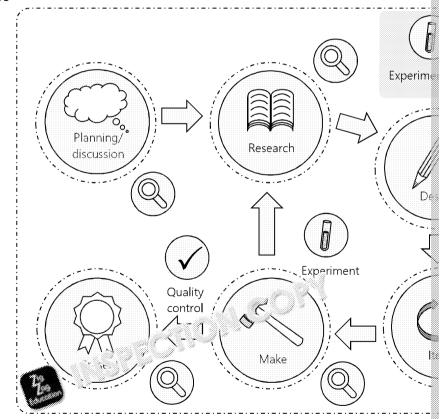


Activity 21 – Design Strategies: Design Process

Teacher's notes and answers

Plenary Activity: The Iterative Desi	
Aim of the activity	Students to become familiar with the iterative design process
Teacher's instructions	Split the class into groups. Pho occ wake activity on the next group of students. Give it wants eight minutes to complet cut out the iterative design process order to active minutes at the end of this section going throat answers.
Students' task	Students to cut out the stages and analysis icons. Place the stages into the iterative process diagram, in the correct order. As an extra challenge , students can explain whit is important to analyse and evaluate at every stage of the design process.

Answers



Extra challenge!

It is important to analyse and evaluate at every stage of the design process becausomething to learn and improve on. It will help to make the whole process a succeand stop any minor problems becoming bigger problems later in the project.

Another reason that it is important to evaluate and analyse at every stage of the following the design process of the thought process, problem-solving and reason also include the designer if they choose to revisit the project at a later date.



Herative Design Proce

Iterative design process is the term that describes the process that your design projects go through. To understand how to get the most out of your design project is best to understand the iterative design process and why it's a good way of structuring your design project. Cut out the stages and analysis icons below, then place the stages in the gaps in the iterative process diagram, in the correct order

Stages: **zvaluation:** (To make this a little trickier there are no gaps Experimentation periment control

Extra chali

Why is it important to analyse and evaluate at every stage of t

+ 6.	<u>/i</u> 9	
	Lα	9
E	duca	tion
THE STREET		

Activity 22 – Design Strategie Design Fixation

Teacher's notes and answers

Starter Activity: Avoiding Design	
Aim of the activity	Students to become familiar with the term 'design fixation' and fixation. The technique they will learn is to keep one element creating a series of concept drawings. It is helps the designer ideas and helps them to be restricted with styles and aesthetics about functionally to be tures. The technique of using an undato preval and aims by helping the designer to avoid spending locations and spending time on perfecting the drawing insteaded gras.
Teacher's instructions	Photocopy the activity on the next page and give one copy to 10 minutes to complete the activity. If any of your students are weaker at drawing, they should trace the example picture example picture, leaving white space around it. Draw around it as an underlay to help get the correct shape and size for the features and details using this as a guide. If the paper is too the example picture closely and draw around the edges to get the Consider keeping the designs that result from this activity for Strategies: Evaluation.
Students' task	Students to complete this quick-sketch activity as a starter or

Eq.





Design Fixation – How to

Here is a design for a basic blender. Part of the design has been isolated. The top has been copied for you. Come up with some quick ideas for the design of the basthe blender.

This technique helps to prompt a variety of ideas, styles and aesthetics without thinking too much about functionality or features, preventing the tendency for design fixation! The technique of using an underlay or part drawing also helps to prevent fixation by helping the designer to avoid spending lots of time making the drawing gs look 'right' and spending time on perfecting the drawing is so producing creative designs.

Try to use different techniq and designs. Experiment with pencils and pastels.







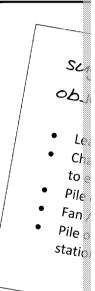


Activity 23 – Design Strategies Communication

Teacher's notes and answers

Starter Activity: Quick Design De	
Aim of the activity	Students to learn drawing techniques to aid design communic
Teacher's instructions	Pick a product or sample objects it is students to draw. (The development.) Photocopy activity on the next page and give Time the students of the first drawing, 30 seconds for the first drawing, 30 seconds for the last. After the time at the drawings and evaluate their best drawing.
Students' t	Students to complete this quick-sketch activity as a starter / in



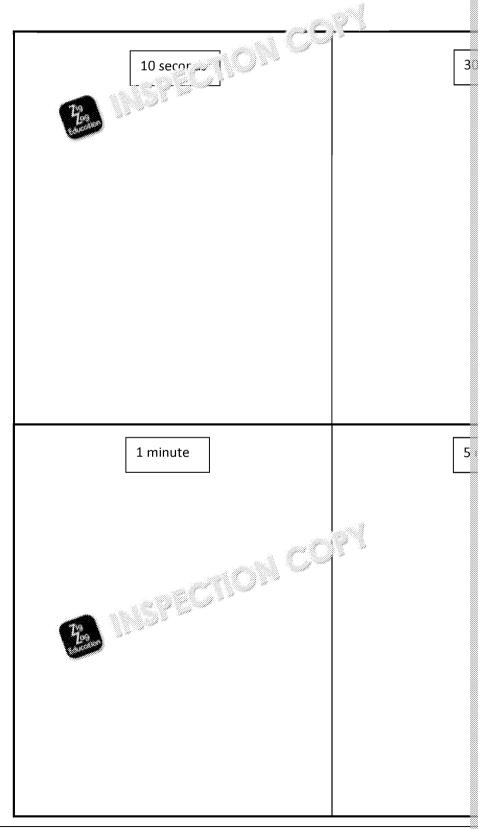






Design Strategies: Quick Communication

Timing drawings can be a good way of developing quick-drawing skills, to gain a different perspective on what you are designing and allow opportunity for further creativity (when the luxury of time is taken away!). Below are four boxes with different time settings. Using your selected product, draw the same item four times using these time frames, and evaluate the effect this has on your drawings.





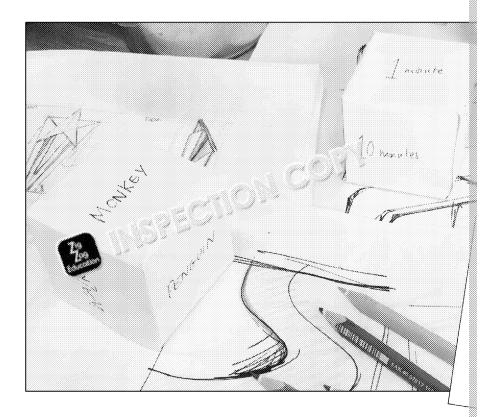
Activity 24 – Design Strategies

Teacher's notes and answers

	Starter Activity: Design Di
Aim of the activity	To help students to do some quick idea generation and practise
Teacher's instructio	Split the class into groups of at least the shotocopy the action copy to each student. Provide the students with scissors, the students 10 minutes complete the activity. If voided as a starter and the design activity 25 – Sketch/Model/Test and Activity 26 – Design Strater, ready for use as a starter in the next lesson. Alternations as a starter and the design activity could become the plenary.
Students' task	Students should work in groups to make at least three design should make the 'Time Limit' dice, and the other two students categories, including product type, inspiration sources, etc. (Or assigned.) When the students have made the dice, they should time shown on the dice and design what the other two dice debelow indicate to design a piece of furniture, inspired by a more

Answers

Example of completed design dice:





Design Dice

Get into groups of at least three. Fill in the dice sides, each person should choose different category one person should have the time limit category and the other (or more) should choose from the other categories below (product types, inspiral sources, etc). Cut out the net and stick together using the flaps. Roll one or more the dice to inspire a quick design challenge. Set the timer to the time indicated by time dice. Whatever the other dice lands on is what you should design. For instance one dice lands on furniture, one on monkey and the time limit dice lands on one minute. You have to design a monkey inspired piece of furniture in one minute.

Design dice categories to choose from:

- Product yp () g, furification
- Insp. _____ sources
 (plants, animals, architecture, etc.)
- Materials (wood, plastic, metal, paper, fabric)
- Target market (young professional, older person, visually impaired people, etc.)

One dice must have:

 Time limits – make these short to increase the challenge! (30 seconds, 2 minutes, 5 minutes, etc.)



Activity 25 – Sketch/Mod

Teacher's notes and answers

	Starter Activity: Sketch/Mode
Aim of the activity	To practise quick sketching and modelling skills, as well as conskills.
Teacher's instructions	Split the class into groups of three. Photocopy the activity on page at the dotted line (to avoid one of the people in the group one copy to each group of student Provide the students with materials. Give the students with materials with materials. Give the students with materials with materials. Give the students with materials with materials with materials. Give the students with materials with materials with materials with materials. Give the students with materials wit
	Students should work in groups of three. They should decide we be the first person), who wants to model (they will be the second guess (they will be the third person).
	The first person in the group chooses a word from column one activity page. The second person chooses a word from the second put together to create a product; for instance, 'Lion Hairbrush'
	The third person can't know what the words are or which one
	The first person quickly sketches a design of the given product sketching). When they have finished sketching, they should paperson.
Students' task	The second person models the design in the sketch using clay, Blu Tack (allow about four minutes for modelling). The second change one thing about the design, if they feel it will improve
	The third person is shown the model and not the sketch. They guess what the product is. After the three guesses, each group model and reflect on whether the product was correctly guess briefly evaluate how they think it yes what went well and he
E	Extra challenge! / Silvary The work selected discuss Dutch designer Maarten Billian bases his final designs on models. This is his website: http://maartenbaas.com/sculpt/



Sketch/Model/Test

Split into groups of three. Decide who wants to sketch (you will be the first person who wants to model (you will be the second person) and who wants to guess (you be the third person).

The first person in the group chooses a word from column one of the 'Term table' below. The second person chooses a word from the second column. The two wo are put together to create a product; for instance, 'Lion Hairbrush' or 'Monkey Scissors'.

The third person can't know what the words are or an ones have been chose The first person quickly sketches a design of the great product (you have about forminutes for sketching). When you have a night a sketching, pass the sketch to the second person.

The second person has the opportunity to chaif they feel it will improve the design.

The third person is shown the model but not the sketch. They have three guesses is. After the three guesses, you should look at the sketch and model and reflect correctly guessed or not. You should then briefly evaluate how you think it went have been improved.

Term table:

Product type	Inspi
Table	
Chair	
Fork	
Phone case	
Stapler	
Watch	
Headphones	1
Hairbrush	
J. : : : : : : : : : : : : : : : : : : :	

Extra challenge!

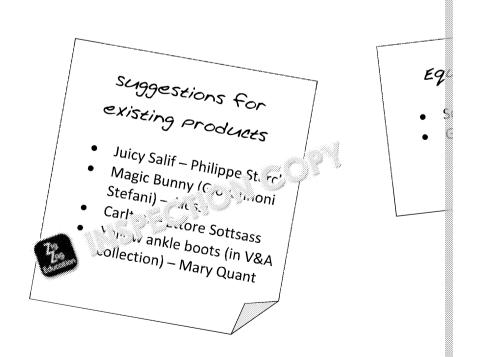
The work of others – discuss Dutch designer Maarten Baas, who bases his final designer Maarten Baas, who bases



Activity 26 – Design Strategies

Teacher's notes and answers

Starter Activity: Design Strategies Students to learn and practise the six hats evaluation technique Aim of the The students can also complete the extra challenge (possibly & activity they feel about criticism and explore a 'reframing' technique. Split the class into groups of six. Photo the next two pages to each group of students. Fact grain should be provided with idea or existing product aluate. (The designs that are a re could be used or the wisk, or a selection of existing products Teacher's belo: instructions Give the students 10 minutes to complete the activity. The extra challenge could be completed as a starter extension In groups of six, the students will use the six thinking hats syst existing product. They should each choose a hat to be and foll activity page to make a 'finger hat' that they can wear on thei (This can be skipped and roles can just be assigned – the infor students to inform and indicate their role.) Students should cu Students' task hat they are going to 'be' and keep it for reference, and to rem that the hat represents. They will then consider an idea / exist provided. The group will take it in turns to evaluate the design their hats represent. The person with the blue hat should make on track and make sure everyone has a turn at evaluating.





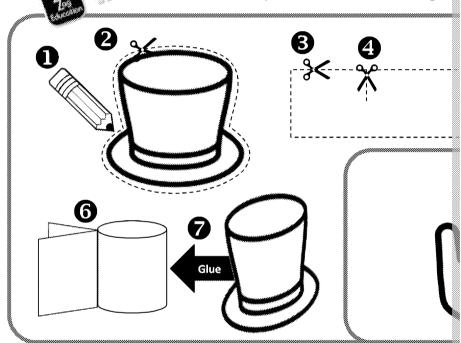
Six Thinking Hats® – Edward

The six thinking hats is a system designed by Edward de Bono which helps you to evaluate ideas and design individually or in a group as part of collaboration.

Each of the six hats represents a way of thinking. If you evaluate an idea or design from all six points of view you can be sure that you have explored all the aspects the idea in the most productive way. The system also helps to give structure to give aluation sessions – keeping them on track and helping to keep feedback constructive.

For this activity you will be getting into groups and using the six thinking hats systo evaluate an idea or existing product. In groups of six y ill each choose a hinstructions below to make your finger hat. Cut or and expectation card of your the thinking style that your hat represent

Consider the idea / existing de the your group has been given and take it in the design from the point of that your hat represents. The person with the keep the diagram of thack and make sure everyone has a turn at evaluating.



- Colour in the hats to match their names.
- 2 Cut out the hats.
- 3 Cut out the finger straps.
- and **S** Cut the slots in the finger strap. If you have you will slots closer together or if you have bigger find en ou might want to cut
- **6** Fold over the finger strap and fit the strategy ts settler.
- **⊘** Glue the hats onto the fir ₃ a to a to a.......

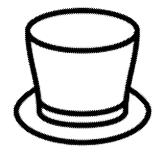
Extra challengel

Discuss the consistence of the c

Reframe the idea of criticism

Consider this comment as an 'opportunity to improve' the design. This makes ge Sometimes criticism can be hard to hear (especially if it is about an idea or a design about!). It is important that criticism is always given to others with a positive interimprove, and that it is received in the same way. If you disagree with the criticism why the feedback was given; for example, maybe the person giving feedback miscase, consider that the design might need to be communicated more clearly. This more annotation to the design.







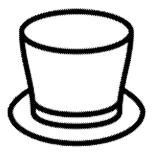
White hat – facts

Used for facts, figures and information. The wh hat is neutral and focuses on the factual information.



blue hat - rrocess

Used for thinking thanking. The blue has focuses on a finite action plan, organisation nows and action plans. In this case it will di h evaluation process, keeping the discussion track and making sure that everyone has had a 🐛 and said something relating to their hat.





Green hat - creativity

The green hat is for creative thinking, exploring new ideas, alternatives and possibilities.





Yellow hat - benefits

Used for positivity! Looking at the positives ar benefits of an idea or situation.





Red hat toelings

This hat foruse swemotions – gut reaction, ം നാടി reelings that an object or a situati





Black hat - cautions

The black hat focuses on the risks and elements caution – the difficulties an object or a project might face, and its weaknesses.



Activity 27 – Communication of Rey Terms

Teacher's notes and answers

F	Plenary Activity: Communication Ideas – Key Terms
Aim of the activity	Students to solidfy and demonstrate in incompledge of design
Teacher's instructions	Split the class into a lip . Inotocopy the activity on the next particle of the students eight minutes to complete the students are the end of this section going through the correct and
Students'	Students to write definitions for different communication met

Answers

Isometric

	are drawn at 30°.
Perspective	Creating the illusion of a 3D object using 2D drawing technic
2D drawing	A drawing that is flat, without depth.
3D drawing	A drawing that has depth and visually describes a further d
CAD	Computer-aided design.
Schematic diagram	A diagram showing a system such as an electronic circuit.
Exploded diagram	A diagram that shows all the components in an isometric vitte components assemble.
Working drawing	Orthographic and isometric drawings that are to scale and

A 3D view of an object or a design. That is not distorted for

A drawing showing a 3D object as a 2D drawing. It includes

A design that is drawn to the area are ments that the design

size). This technique is the size of



Orthographic

Drawn to scale



Communication of Design Ideas

In your group, write definitions for the key terms below. Isometric Perspective 2D drawing Schematic diagram Exploded diagram Working drawing Orthographic Drawn to scale



Activity 28 – Communication of Scaling Drawings

Teacher's notes and answers

	Starter Activity: Scaling Drav
Aim of the activity	Students to learn drawing techniques to aid design communic
Teacher's instructions	Photocopy the activity on the rext research give one copy to 10 minutes to complete the ctivity.
Students' task	Students ar'éce this quick-sketch activity as a starter / in



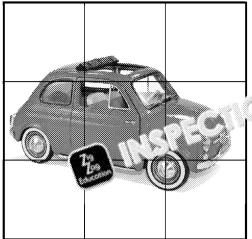


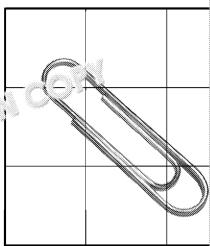


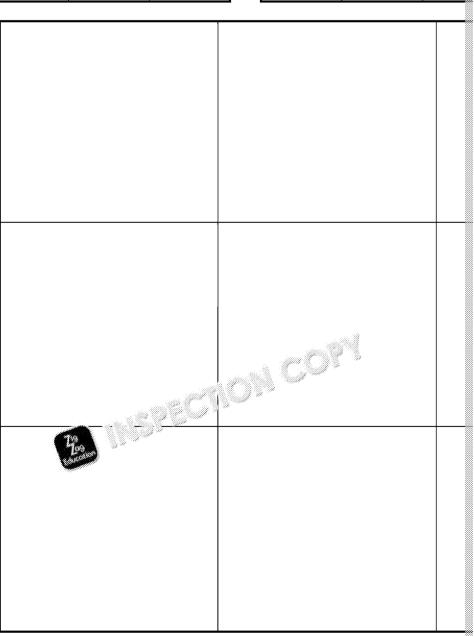


Communication of Design Scaling Drawings

Choose one of the images below and, using the grid below, draw a scaled-up versof the picture. Using a grid makes enlarging images much easier and much more accurate. Draw what is in one square of the grid at a time.





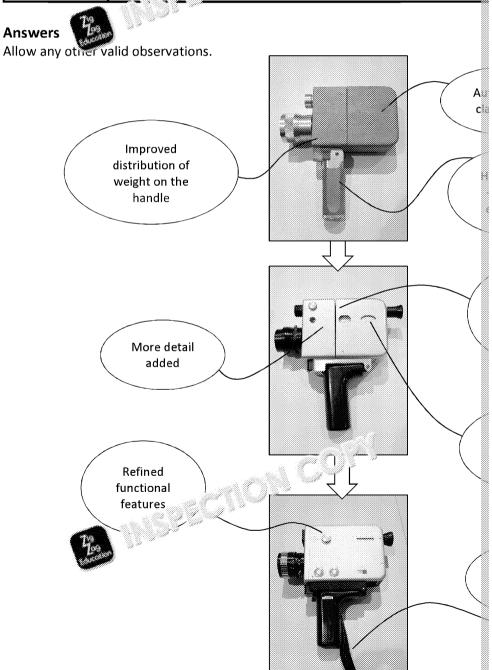




Activity 29 – Prototype Dev

Teacher's notes and answers

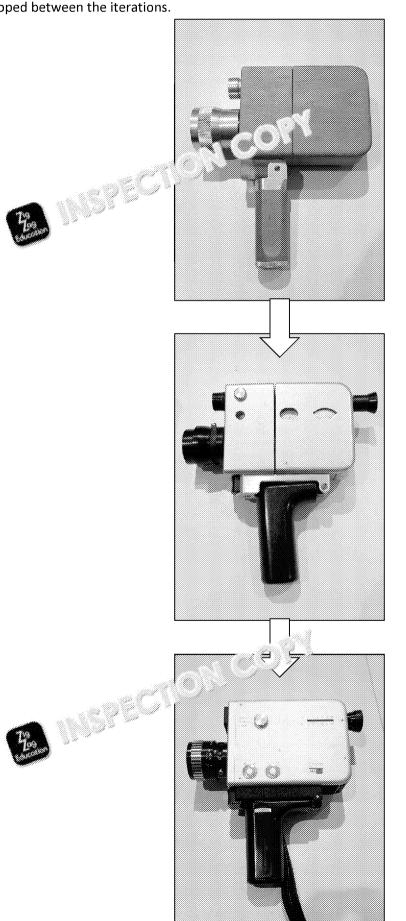
	Starter Activity: Prototype Deve
Aim of the activity	Students to analyse an example of prototype development.
Teacher's instructions	Split the class into pairs. Photocopy the activity on the next papair of students. Give the students eight in nutes to complete at the end of this section going and up have correct answers.
Students' task	Students to analy the pairs and annotate the





Prototype Developme

The prototypes below are for a film camera by Dieter Rams. In pairs, consider the development of the prototype and annotate the pictures to show what has change and developed between the iterations.



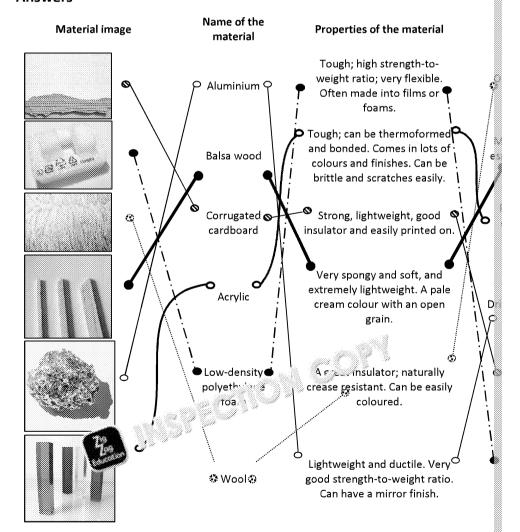


Activity 30 – Selection of Mal Components

Teacher's notes and answers

Starter Activity: Match the Mate Standard Components		
Aim of the activity	Students to practise applying their knowle ge of material, procomponents.	
Teacher's instructions	Photocopy the action of the next page and give one copy to eight min the page and give one copy and give one copy to eight min the page and give one copy and give o	
Students' t	Students should match each material to its name, properties, and standard components that could be used with the material	

Answers



Extra challenge!

- Polypropylene or teak
- 2 Stabilisers for plastic (UV-resistant additives) or varnish / wood preservative f



Match the Materials and S Components

Match each material to its name, properties, what it is commonly used for and standard components that could be used with the material. One has been completor you.

Material image	Name of the material	Properties of the materials
	Aluminium	Town; shearength-to- veight ratio; very flexible. Often made into films or foams.
Ca Ca Carella	Balsa wood	Tough; can be thermoformed and bonded. Comes in lots of colours and finishes. Can be brittle and scratches easily.
	Corrugated cardboard	Strong, lightweight, good insulator and easily printed on.
	Acrylic o	Very spongy and soft, and extremely lightweight. A pale cream colour with an open grain.
	Low-density polyethylene foam	A great insulator; naturally crease resistant. Can be easily cs's ed.
	Wool	Lightweight and ductile. Very good strength-to- weight ratio. Can have a mirror finish.

Extra challenge!

- Can you name a specific material that would meet the following brief?

 Children's outdoor furniture that will be used outside. It must be resistant to
- 2 Can you suggest additives or treatments that would make the material ever

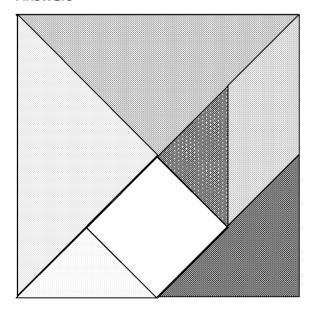


Activity 31 - Material Mana

Teacher's notes and answers

	Plenary Activity: Material Mana
Aim of the activity	Students to understand material management and why it is in
Teacher's instructions	Photocopy the activity on the next page and give one copy to eight minutes to complete the activity and two minutes at through the correct answers.
Students' task	Students to cut or the speed on the next page and try to fit them ont is the companient of the stock of the companient o

Answers



Why is it important to efficient way possible? It is important to minimise was environmentally friendly. This management. Reducing many profit margins for the product priced more competitively. Reproduct on the environment is responsibility.

Extra challenge! – Multiple choice

Marking-out methods

What is an important rule to bear in mind when ranking cut material before cut. **B. Measure twice, cut once!**

Tolerances

Answer the le socie question – tick the option you think is correct.

A part of a p is 2 mm bigger than it was designed to be, but the product has C. The part is within the required tolerances, the part can be used as it is.

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Zig Zag Education

Material Manageme

How many of these shapes can you fit onto the sheet material? Cut out the shap and try to fit as many as possible onto the sheet material.

Sheet material: Why is it important to use material in the most efficient way possible? Extra challenge! - Multiple choice Marking-out methods What is an important rule to beginn the when marking out material before cut A. Don't bother m ் அடி B. Mea vice, cut once! C. Cut f easure later! **Tolerances** Answer the multiple-choice question – tick the option you think is correct. A part of a product is 2 mm bigger than it was designed to be, but the product has A. The part is unusable; recycle or dispose of it and start again. B. The part needs trimming or sanding. C. The part is within the required tolerance; the part can be used as it is.



Activity 32 – Specialist Tools ar

Teacher's notes and answers

Plen	ary Activity: Specialist Tools an
Aim of the activity	Students to practise applying their knowledge of specialist too
Teacher's instructions	Split the class into pairs. Photocopy the activity on the next papair of students. Give the students eight in hutes to complete at the end of this section going and which correct answers.
Students' task	In their pairs, study is stand fill in the specialist tools and equation and the techniques and color in the last column, write one health and safety precau

Answers

Accept any appropriate tools, equipment and health and safety precautions. For

Material categories	Specialist technique/process	Specialist tools/equipment	Hea
Polymers	Vacuum forming	Vacuum former	Make ventil Don' Make are tell
Timber-based materials	Turning	Lathe	 Make tied be tied be wear Wear Wear Be aware emer
Metal and alloys	Soldering	Soldering ir an	Make ventil Make tied by Weal Weal Be ave ements
Paper and Paper	Perforation	Perforator / rotary perforator / hole punch	Be cass Use as surfact Make the floor
Textiles	Batik	Tjanting / canting tool / brush	 Wear Prote Make surface Don't Do not



Specialist Tools and Equi

In the table below, fill in the specialist tools and equipment that are relevant to the material category in the first column, and the technique or process in the second column. In the last column, write one health and safety precaution for using the equipment.

Material categories	Specialist technique/process	Specialis* -) quipment	H
Polym	vacuum forming		
Timber-based materials	Turning		
Metal and alloys	Soldering		
Paper and boards	Perforation		
Textiles	Batik		



Activity 33 – Specialist Techn Processes

Teacher's notes and answers

	Plenary Activity: Specialist Tecl
Aim of the activity	Students to practise applying their an allerge of specialist techniques.
Teacher's instructions	Split the class intensises, incocopy the activity on the next par pair of stables of the students eight minutes to complete a the on this section going through the correct answers.
Students' task	In their pairs, students should fill in the specialist techniques at to the material categories in the first column. In the last colum health and safety precaution for each process.

Answers

Accept any appropriate techniques, processes and health and safety precautions

Material categories	Specialist techniques/processes	Heal
Polymers	Injection moulding	Work in a
Timber-based materials	turningroutingsawingdrillinglamination	Wear a modern breathing
Metal and alloys	 milling drilling cutting and shearing brazing welding 	Wear heat-reprotection.
Paper and boards	 die cutting offset lithography perforation cutting and shearing lamination bonding creasing folding 	Cut away scalpel or
Textiles	 coding to a printing scaling batik pressing pressing drape forming bonding weaving dying 	Tie back



Specialist Techniques and P

In the table below, fill in the specialist techniques and processes that are relevant the material categories in the first column. In the last column, write one health a safety precaution for each process. One of each has been completed for you.

Material categories	Specialist technique (1) cesses	Heal
Polymers	Injection moulding	
Timber-based materials		
Metal and alloys		Wear heat-reprotection.
Paper and boards		
Textiles		



Activity 34 – Surface Treatn Finishes

Teacher's notes and answers

	Plenary Activity: Surface Trea and Finishes
Aim of the activity	Students to practise applying their so fee ge of surface treat
Teacher's instructions	Split the class into a Solocopy the activity on the next paper of stable of the students eight minutes to complete a Solothis section going through the correct answers.
Students' task	In their pairs, students should match the images of surface tre names and the material categories they are used for. Possible one is a decoy.

Answers

Surface treatment or finish image	Surface treatment or finish name	
	UV varnishing	
	Powder coating	
	Varnishing	
	Dyeing	
	Vinyl decals	
	Embossing	



Surface Treatments and F

Match the images of surface treatments and finishes to their names and the mate categories they are used for. Use the listed surface treatment and finish names, beware – one is a decoy!

Surface Treatment or Finish Image	Surface Treatment or Finish Name	Material Catego

