Sandringham School
'Everybody can be Somebody'

Design & Technology Faculty

Year 7

Key Stage 3 –Bio mimicry

Name: _____ **Rotation:** _____

Group: _____ **Teacher:**.....

Sandringham School
'Everybody can be Somebody'

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Year 7

Know		Plan		Making		Evaluation	

Mid term grade		Effort		WWW		EBI	

Final Grade		Effort		WWW		EBI	
				Comment			

Key Stage 3 Assessment tracker

On a number of pieces of classwork and homework you will be given a grade for that piece as well as an **E** for effort, a **WWW** for what went well and an **EBI** for what you need to do to improve. Look at your work and use the guide below to see what you have done well and what you need to improve in this rotation.

Effort
A:Excellent, very high quality of work
B:Very good quality of work
C: Your work requires improvement.
D:This is a very poor standard of work., I

WWW
P1: Some creative ideas, well done.
P2: Excellent presentation, keep it up.
P3: Your work is well written and you have expressed yourself clearly
P4:You have been very accurate with your work
P5:You have carried out research from multiple sources and analysed the information well.
P6:You have annotated your work clearly and have made relevant points.
P7:You have shown you have an excellent understanding of the different processes and techniques
P8: You have produced some excellent design work and have developed it well.
P9: You have been consistently working well, keep it up!
P10: The level of your work has improved greatly.
P11:Your designs are well thought out and show great planning, you have even included 3D designs.
P12: You have made excellent choices when it comes to the theme of your design ideas.
P13: You have planned your work well taking into account areas for improvement and development.
P14:You have looked at existing designs and have used this research to develop your design ideas.
P15You have evaluated your work and have made some excellent conclusions to your work.

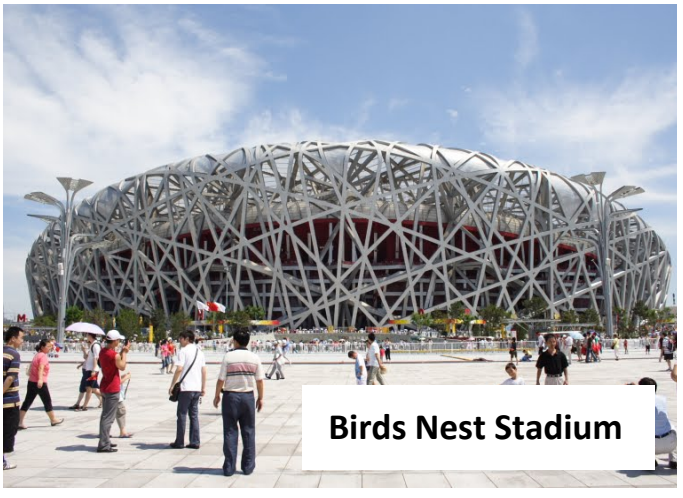
EBI
R1: Write in full sentences and check your spelling and grammar.
R2: Homework is missing or incomplete, see me to catch up.
R3: Concentrate on the task at hand to improve the quality of your work.
R4: Aim for more detail in your work to reach the next level.
R5: follow all instruction on the board or on the booklet page to ensure you have completed all the marking criteria
R6: Annotate your designs, using WWW, EBI and ACCESSFM as talking points.
R7: Take your time, don't rush your work to help improve its overall quality.
R8: Practice your Isometric drawing to improve the level of your design work.
R9: Use correct equipment (pen, pencil, ruler, compass etc.) to improve your work and improve accuracy
R10: Add colour, shading and rendering to improve your designs
R11: Make sure all instructions are followed and familiarise yourself with all the tools, techniques and processes.
R12: Make sure you complete all necessary planning to ensure product is made to a high standard.
R13: Analyse your research work thoroughly and ensure you explain what you have found out from this research and how will it help you in your project.
R14: Explain the strengths and weaknesses of your design ideas
R15: Evaluate your work in more detail making sure to reflect on your design brief and/or design specification.

SP	P	EXP	CAP	NP
Spelling	Punctuation	Needs further explanation	Capital letter	New paragraph

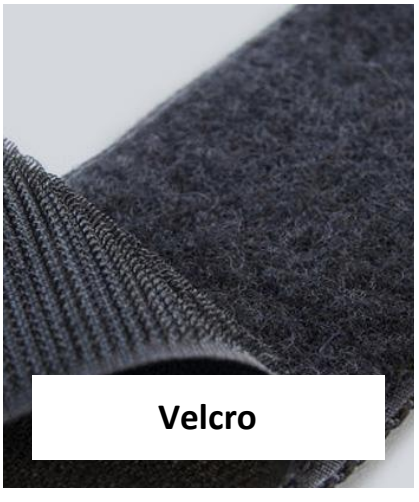
Level	Research	Planning	Making	Evaluation
	Investigating the design task and identifying the 5W's	Producing ideas and planning out the practical element of the project	Producing the final outcome for your project	Testing and Evaluating your work throughout the project
EP	GCSE standard of work	GCSE standard of work	GCSE standard of work	GCSE standard of work
M	Carefully selected a wide range of research from multiple primary and secondary resources. Shown excellent understanding of the project brief/assignment Detailed and robust Analysis of research Target audience identified and intended user/consumer profiled	Imaginative & original design ideas showing creativity and flair A detailed plan of manufacture with a wide range of processes and techniques considered Fully developed ideas in light of on-going research and experimentation Appropriate materials and ingredients selected with full regard of their working properties Analysis of research fully considered in product specification	Final outcome shows a very high level of skill and accuracy Evidence of selecting and using appropriate tools and equipment skilfully and safely Working independently to produce a rigorous and demanding outcome Final outcome has the potential to be commercially viable	Detailed testing and evaluation undertaken with feedback from the intended user All aspects of the final outcome have been tested against the initial brief Any need for modifications is justified and suggestions to made for a commercial outcome.
S	Good understanding of the project brief/assignment Some appropriated research selected from multiple sources and analysed Identified the intended user and analysed in research	Imaginative ideas that show a degree of creativity Evidence of planning and a design strategy in place using a range of processes and techniques Appropriate materials and ingredients selected with regards to their working properties Analysis of research is evident in the planning of the final outcome	Final outcome shows a good level of making and accuracy Selected and used tools appropriately and safely Outcome demonstrated a high level of demand Outcome has the potential to be commercially viable with some developments	Appropriate testing and evaluation evident throughout the making and planning process Most aspects of the final outcome have been evaluated against the original brief Evaluation justifies any need for improvements
D	Basic understanding of the task Undertaken some research but from one source and with a basic analysis of findings Made some consideration towards the intended user	Ideas show some degree of imagination and creativity Ideas are not fully developed but show some consideration of different processes & techniques Some appropriate materials have been selected but there needs to be more consideration to their working properties Some consideration to prior research is evident	Final outcome shows a basic level of making Used tools and equipment safely Parts of the outcome show a high level of demand The outcome requires further development to make suitable for the intended user	Evidence of a basic testing and evaluation undertaken Some aspects of the outcome have been evaluated against the initial brief Some possible improvements suggested
E	Limited understanding of the project brief/assignment Minimal research undertaken and some from a duplicated source Little evidence of analysis of research and findings Limited understanding of who the target audience is.	Ideas show some variation in their approach A limited design plan with very limited consideration of techniques and processes Materials and ingredients selected but with little or no regard to their working properties	Final outcome is largely complete but shows a limited level of making Materials and equipment used safely but under close supervision Worked with some assistance to produce the final outcome	Minimal evidence of evaluation and testing taking place Initial brief/assignment not considered in any part of the evaluation Very little mention of potential improvements suggested
BP	Working towards a level 1	Working towards a level 1	Working towards a level 1	Working towards a level 1

Initial Research


Bullet Train


Birds Nest Stadium

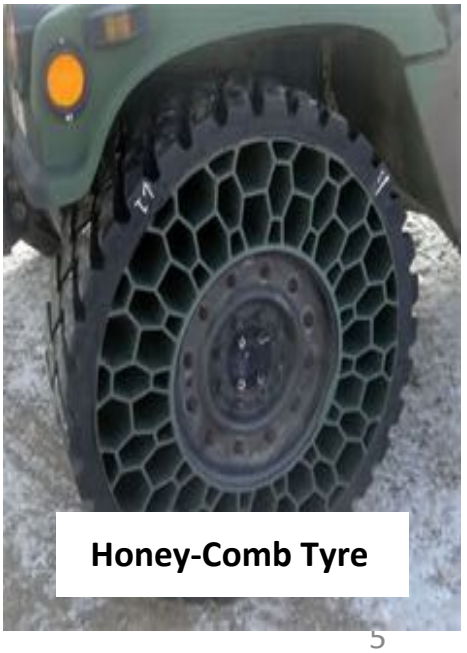

Raindrop Tent


Velcro


The “Green” City


Scale Mail Armour


Shark Skin Swimsuit


Honey-Comb Tyre

Know how to effectively analyse different products
Understand what to include in your product analysis
Be able to use your findings to help develop your designs

Place chosen image here.

A	AESTHETICS What does the product look like? What style/shape/colour is it? Is it attractive?	
C	CUSTOMER Who is the target market (intended customer/buyer)? How can you tell this?	
C	COST How much do you think it would make to cost? What price would it be sold for? Why do you think this?	
E	ENVIRONMENT Would the materials used to make this product harm the environment? Is it recyclable?	
S	SIZE What is the size (mm) of the product? Is this size appropriate—why?	
S	SAFETY Is there any part of the product that might be unsafe for the user? What precautions can/have been taken?	
F	FUNCTION What is product designed to do?	
M	MATERIALS What is the product made from? Is this a good/bad choice? Why?	

Topic: Initial Research

Know what a mood board is
Understand what type of media to include in your mood board
Be able to produce a mood board to help with the research and design of your product.

Many designers use nature as a source of inspiration for their own designs. They consider form, shape, colour, pattern, movement as well as function.

Alessi is an Italian homewares company which often uses Bio-Mimicry as a source of inspiration to create quirky and unique products.

Research **Alessi** and create a mood board below of their line of interesting and bio-mimicry inspired products.

Images of Alessi's products showing interesting shape, colours, patterns and function.)

Topic: Initial Research

Know what a mood board is
Understand what type of media to include in your mood board
Be able to produce a mood board to help with the research and design of your product.

On this page, can you research 3 other designers who use Bio-Mimicry in their work. Some examples are

Enrico Gondim

Lilian van Daal

Michael Pawlyn

Nicholas Grimshaw Architects

Anthony Brennan

Annette Ferdinandsen

Images of 3 of the designers work goes here.

Topic: Smart Materials

Know what a mood board is
Understand what type of media to include in your mood board
Be able to produce a mood board to help with the research and design of your product.

A smart material is a reactive materials that changes its properties due to an external stimuli or changes to its environment, such as sudden changes in temperature or light.

There are many types of smart material and they can all be used in a variety of different ways.

Listed below are three commonly used smart materials. Research and describe each one. Write down examples of these materials that you have found either on the internet or that you may have seen at school or at home.

Polymorph Plastics	Chromogenic Systems: Electrochromic Materials Thermochromic Materials Photochromic Materials
Phosphorescent Pigments	Examples

Know what a design brief is.
Understand what to include in a design brief.
Be able to analyse a brief and identify the key information for your project.

Design Brief

In this project you will be designing using **Bio-Mimicry as your main inspiration.** You have several project options to choose from:

1. ARCHITECTURE
   Using bio-mimicry as your inspiration, design a large scale building which will be the focal point of its city/location. You could consider designing a sport/music venue, a new restaurant concept or a living space.
1. FURNITURE DESIGN
   Using bio-mimicry as your inspiration, design an item of furniture for the home. It should be made of cutting edge materials and/or incorporate new technology. It will need to functional and practical as well as aesthetically pleasing.
1. PRODUCT DESIGN
   Using bio-mimicry as your inspiration, design a product to solve a common problem you or someone you know experiences everyday. This will need to be a functional and well designed item for regular use.

Pick one of the briefs above and brainstorm your initial thoughts and idea in the space below on this page.

Know what a design brief is.
Understand what to include in a design brief.
Be able to analyse a brief and identify the key information for your project.

In this space, write about the intended function of your design and explore what you think your design must achieve when it is complete.

Identify

What does your product need to do? Can you think of anything that already exists in nature that does a similar job to your design. What might you look at in nature help guide your idea?

Interpret

Topic: Design Specification

Know what a design specification is.
Understand how a design specification helps with the design process.
Be able to create a specification list using your brief and task analysis.

The Specification:

Read through your chosen design brief and your notes carefully. Pick out the key points. Using these as a guide, write a specification that you hope your idea will achieve.

Top tip: write in full sentences and explain every point you make!

1	
2	
3	
4	
5	

Word Bank

target market design aesthetics function Bio- mimicry
durable nature shape form colour visible

Topic: Generation of Ideas

Know how to produce a generation of ideas
Understand the importance of generating a number of ideas for a project
Be able to create your own generation of ideas for the item you're going to make

Once you have added finished your design ideas using a <u>PENCIL</u>, <u>COLOUR</u> and a <u>RULER/COMPASS.</u> Look at the board to see how you should <u>ANNOTATE</u> your work.

Sketch 4 ideas for your Badge idea, remember to annotate and render your designs. .

D+ needs to be in ISOMETRIC

Paste a picture of your **1st** design idea here.

Paste a picture of your **2nd** design idea here.

Paste a picture of your **3rd** design idea here.

Paste a picture of your **4th** design idea here.

<u>I have:</u>

Produced 4 detailed design ideas, in pencil and I have used a ruler/compass
Produced 4 design ideas, In colour and I have added basic annotations
I have produced 4 design ideas, In isometric with colour and some good annotations.

Topic: Development of Ideas

Know how to develop your generation of ideas
Understand the importance of developing your ideas for a project
Be able to develop you ideas further for the item you're going to make

Develop 2 of your ideas using what we have discussed. Then Using ALL of your designs you have done so far conduct a market survey to find the best design and summarise your findings in the space below.

Picture of your **1st** developed idea here

Picture of your **2nd** developed idea here

Design	Name	Name	Name
1			
2			
3			
4			
5			
6			

From my survey, I have found out that the best design is Design _____I think this is because -_____
_____
_____
_____

Topic: Final Ideas

Know how to and evaluate a final idea
Understand the importance of the final idea for your project
Be able to create your own final idea

*You must now produce your final design in the box below using an **Isometric** sketch, this must be the best quality for your design. Underneath you will need to evaluate your design, talk about what you like about the design and also any other features of the design*

Paste a picture of your
final
design idea here.
You should include a front
and back design.

_____
_____
_____
_____
_____
_____

Produced a 2-Dimensional view of my design and produced a basic evaluation.
Produced a 3-Dimensional (Isometric) Design and a detailed evaluation.
Produced a 3-Dimensional and fully rendered Final designas well as a detailed evaluation.

GLOSSARY

Term	Definition *Find meanings for these words to create your own glossary.* *Remember – these definitions need to relate to electronic circuits. Make them as clear and concise as you can!*
Aesthetics	
Annotation	
Anthropometrics	
Bio-mimicry	
CAD	
CAM	
Environment	
Ergonomics	
Function	
Innovative	
Modify	
Smart Materials	
Streamlined	
Survey	

Topic: Evaluation

Know why it is important to evaluate your progress
Understand what you need to look at when evaluating your work
Be able to use evaluation to identify how the product could be improved

1. Does your product meet the design brief and specification?

1. What do potential users think of it?

1. Are you happy with your final design and why?

1. Could you improve or modify the product?

Evaluate your product against the criteria by ticking each area, when choosing the score, remember:

1 = Does not meet the criteria
2 = Okay, mostly meets the criteria
3 = Good, fully meets and possibly exceeds the criteria

Criteria	1	2	3
Aesthetics (how it looks)			
Function (what it does)			
Ergonomics (comfort in use)			
Quality (materials and finish)			
User			
Environment (where it will be used)			

Topic: Evaluation

Know why it is important to evaluate your progress
Understand what you need to look at when evaluating your work
Be able to use evaluation to identify how the product could be improved

5. The focus of the project that I enjoyed most was...

6. List three things you have learnt in this rotation

7. List two areas you need to focus on for the next time you do Product design

.

Know		Plan		Make		Evaluate		Overall	