
AN
INTRODUCTION TO
ARCHITECTURE

RESOURCE PACK

Created by Students at The Welsh School of Architecture

PREFACE

This book of resources aims to assist teachers in delivering the three Challenges and the Individual Project, as well as being a source of inspiration for learners. All work shown has been created by students of the Welsh School of Architecture.

CONTENTS

1

DESIGN PROCESS
LEARNER RESOURCE 1
KS4

3

THE BRIEF
LEARNER RESOURCE 2
KS4

5

FORGOTTEN SPACES
LEARNER RESOURCE 3
KS4

16

EXAMPLE SKETCHBOOKS
LEARNER RESOURCE 4
KS4

26

EXAMPLE MODELS
LEARNER RESOURCE 5
KS4

36

INSPIRATIONAL INTERVENTIONS
LEARNER RESOURCE 6
KS4

46

GLOBAL CITIZENSHIP
BOAT ACTIVITY
KS5

58

INDIVIDUAL PROJECT
SUSTAINABILITY BRIEF
KS5

60

INDIVIDUAL PROJECT
THEORY BRIEF
KS5

62

INDIVIDUAL PROJECT
CONTEXT
KS5

CONTENTS CONTINUED

65

INDIVIDUAL PROJECT
MATERIALITY
KS5

68

INDIVIDUAL PROJECT
STRUCTURE
KS5

71

INDIVIDUAL PROJECT
SCULPTURE
KS5

74

INDIVIDUAL PROJECT
SUSTAINABILITY
KS5

78

INDIVIDUAL PROJECT
ATMOSPHERE & LIGHT
KS5

94

INDIVIDUAL PROJECT
INSPIRATION
KS5

109

INDIVIDUAL PROJECT
VISUAL PRESENTATION
KS5

COMMUNITY CHALLENGE

DESIGN PROCESS LEARNER RESOURCE 1

DESIGN PROCESS

1

ANALYSE THE ENVIRONMENT

2

CHOOSE A SITE

3

MAKE A SITE MODEL

4

CREATE A MANIFESTO

5

DESIGN

TEST

MAKE

6

FEEDBACK

7

DEVELOPMENT

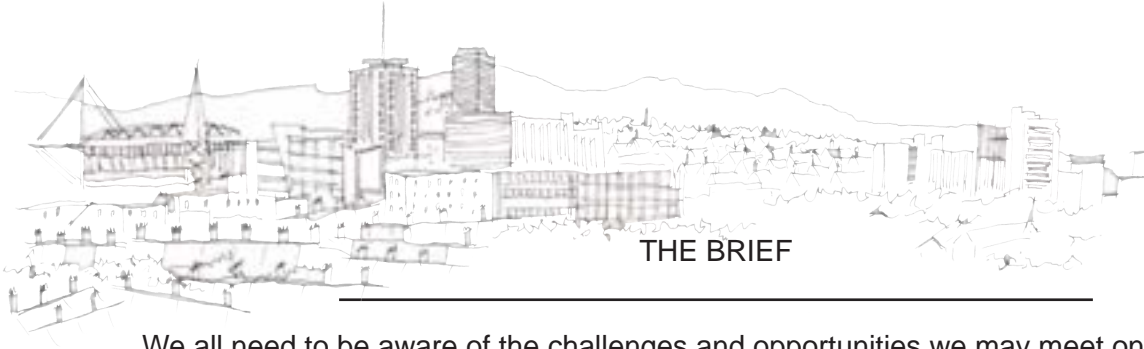
8

FINAL DESIGN

IT SHOULD BE NOTED THAT DESIGNING IS AN ITERATIVE PROCESS RATHER THAN A LINEAR JOURNEY. INSTEAD THE ABOVE IS A GUIDE PROVIDING KEY STAGES OF THE DESIGN PROCESS.

COMMUNITY CHALLENGE

THE BRIEF LEARNER RESOURCE 2



We all need to be aware of the challenges and opportunities we may meet on a personal level in our local community: school, the local area, the nearest village, town or city. During this Challenge you will focus on real-life concerns and needs through activities which aim to make a difference in the community. You will need to consider whether you need to develop and extend your skills, knowledge and understanding to be able to successfully meet the needs of the Challenge.

Are you fed up of litter, fly tipping, dog fouling, tired looking areas and interested in improving your environment? Then why not get involved in a Community Challenge initiative to support improvement of your local community, helping to develop design solutions to enhance the built environment and will benefit the local community.

Design and develop an intervention within a forgotten space in your local community. The intervention at whatever the desired scale should have an emphasis on local identity and place making.

The local community would like your help to improve a forgotten space within the community. You and/or your team must identify and develop ideas to help improve the area, ensuring it is appealing, safe and useful for users. You should aim to source your materials locally and try to incorporate recycled elements within your design. You must actively participate over a minimum of 10 hours to support the development of this area that will benefit the local community.

Remember you will need to consider the following factors:

- What skills do I have to help me complete this task?
- What skills will I need to develop in order to complete this task?
 - Time available
 - Health and safety issues
 - Support and guidance required
 - Impact on the local community

This Challenge will enable you to develop as effective and responsible members of your local community. In competing the Community Challenge you will be able to recognise the contributions you can make towards improving the community in which you live and the benefits this will have for yourself, for others and the environment. You will demonstrate how you can create and manage an action plan when developing opportunities for the community and with the use of feedback can reflect and review your personal performance in planning and carrying out the activity.



COMMUNITY CHALLENGE

FORGOTTEN SPACES LEARNER RESOURCE 3

The presentation contains images of forgotten spaces, although that is also up to the judgement of the learners. The task is simply to get learners to start to think of abandoned and neglected spaces. Prompt questions are provided in the notes section of the powerpoint to get learners to begin to debate the relative merits of each space.



What do you think the current usage of this site is?

Do you feel there is a sense of community or local identity?

Do you think that the space is pleasant or undesirable?



Do you think there are different scales of say urban dereliction?
Do you feel that this image captures any local identity or community?



What do you feel are the issues with this space?

How does this space make you feel?

What interventions do you think could enhance the space?



Do you think this site is pleasant or undesirable?

Do you feel there is a sense of community?

Do you think that the space can be utilised by a wide range of people?



How does the place make you feel?

What are some of the potential issues regarding the space?

Do you think that a use could be found for this space considering it is no longer used as a road?



Who do you think the users of this space are?

Do you feel there should be spaces to stop and sit along the path?



Which spaces do you think are meant to be used by a pedestrian or a car?

What are the issues with the space currently?



How would you describe this space?
Do you think it has any current issues?



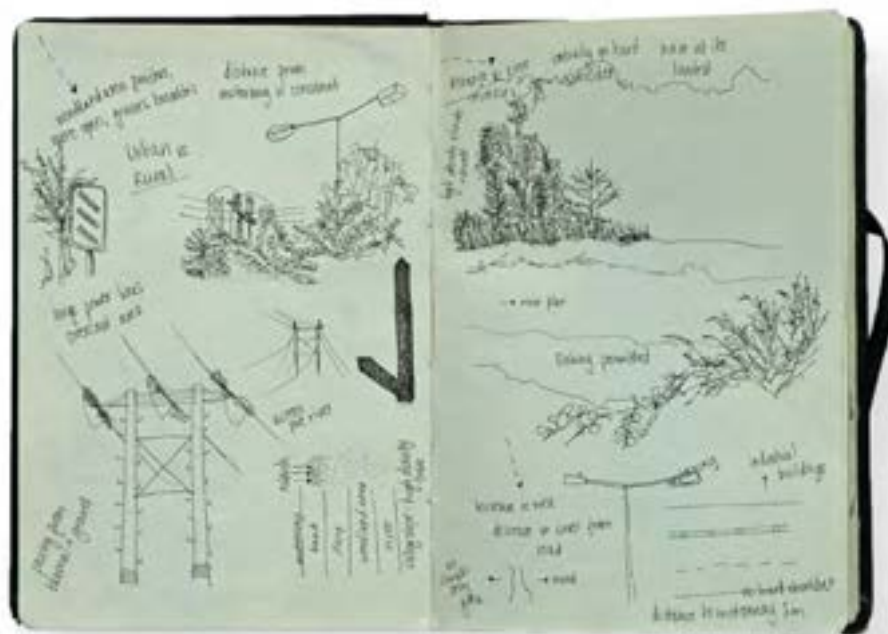
Do you think this space is somewhere you would want to spend time?

Do you think this space could be utilised more and how?

COMMUNITY CHALLENGE

EXAMPLE SKETCHBOOKS LEARNER RESOURCE 4

ANALYSING THE LOCAL ENVIRONMENT WITH QUICK SKETCHES ON SITE

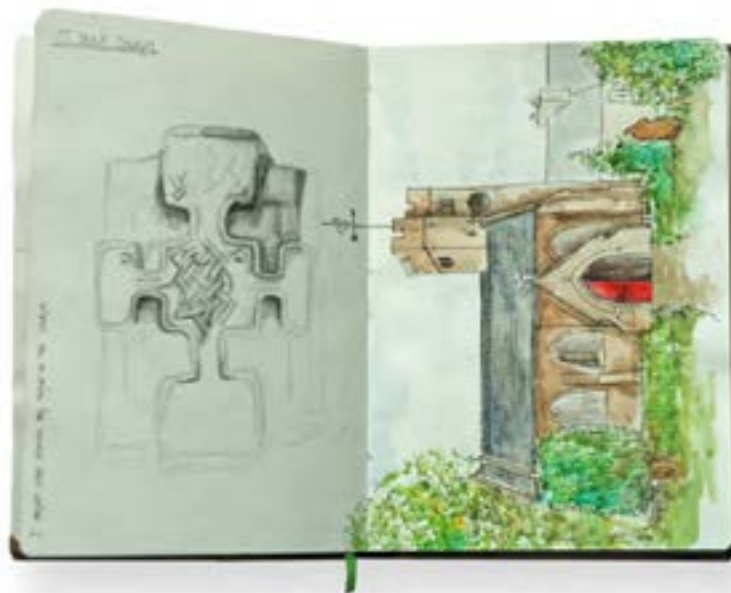


CAITLIN MULLARD – SECOND YEAR STUDENT



CAITLIN MULLARD – SECOND YEAR STUDENT

ANALYSING DETAILS AND THE WHOLE BUILDING



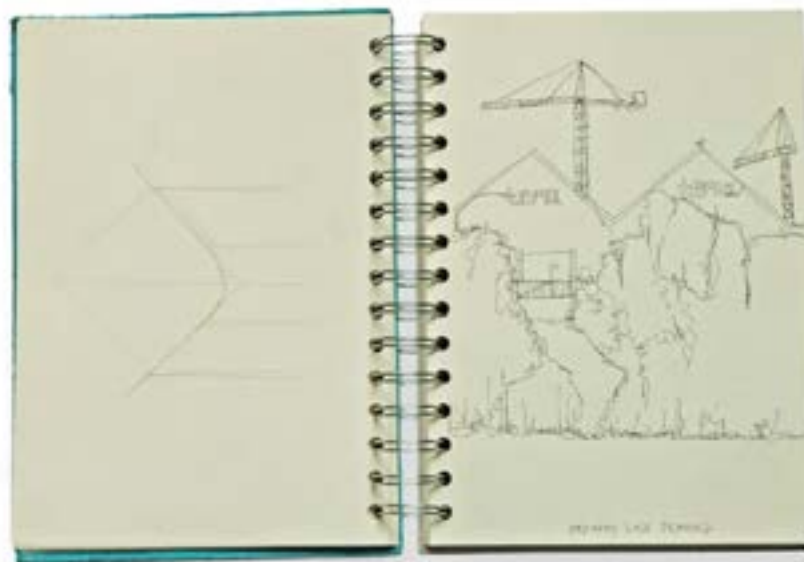
CAITLIN MULLARD – SECOND YEAR STUDENT

STUDY OF INSPIRATIONAL PRECEDENTS



CAITLIN MULLARD – SECOND YEAR STUDENT

CONTINUOUS LINE DRAWING



CAITLIN MULLARD – SECOND YEAR STUDENT

ON SITE INK AND WATERCOLOUR



CAITLIN MULLARD – SECOND YEAR STUDENT

PRINTING



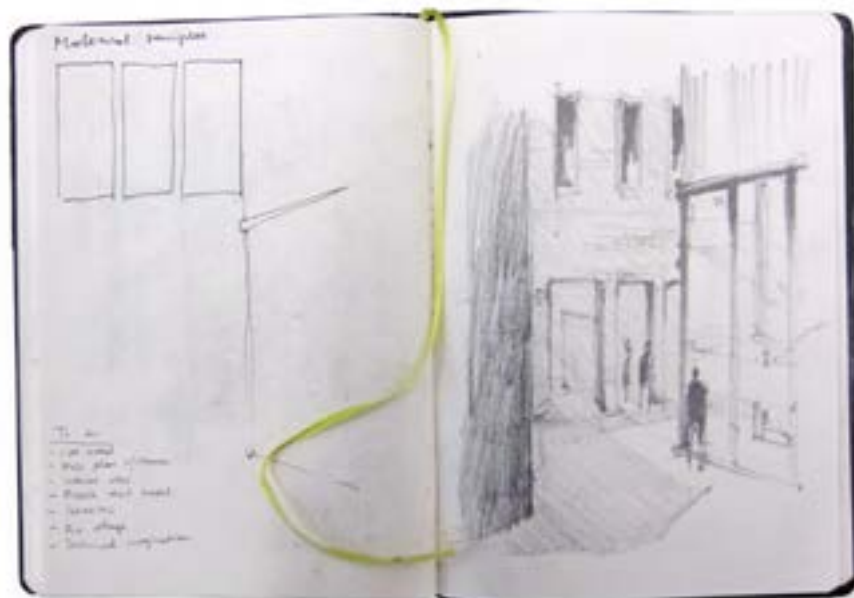
MOLLY MCILVEEN – FIFTH YEAR STUDENT

A VIEW WHICH ENCOMPASSES THE LOCAL COMMUNITY



CAITLIN MULLARD – SECOND YEAR STUDENT

IMAGINING HOW THE SPACE COULD BE



EMILIA IGNACIUK – THIRD YEAR STUDENT

COMMUNITY CHALLENGE

LEARNER RESOURCE 5 EXAMPLE MODELS

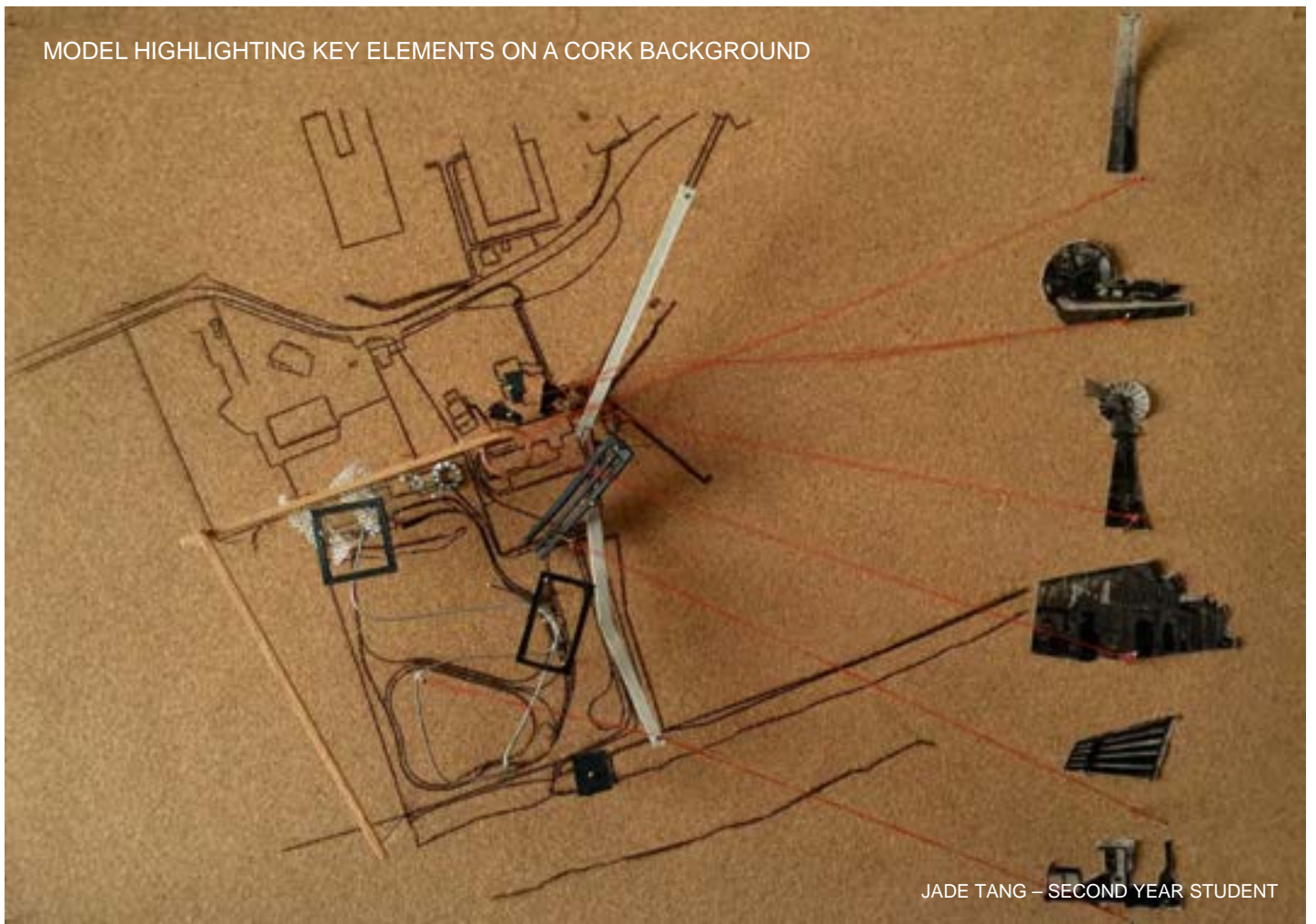


RELIEF MODEL OF A SMALL TOWN MADE FROM CARDBOARD



CAITLIN MULLARD- SECOND YEAR STUDENT

MODEL HIGHLIGHTING KEY ELEMENTS ON A CORK BACKGROUND



JADE TANG – SECOND YEAR STUDENT

MODEL MADE FROM LASER CUT CARD AND FOAM LOOKING AT LINKING POINTS IN THE CITY



TACTILE ABSTRACT MODEL
FOCCUSING ON KEY MATERIALS



CHARLOTTE MOORE– THIRD YEAR STUDENT



WOODEN SITE MODEL

FIFTH YEAR STUDENTS

SITE MODEL CREATED FROM SECTIONS OF OAK



FIFTH YEAR STUDENTS

COMBINATION OF HAND DRAWING AND MODELLING



JOSHUA LEWIS – THIRD YEAR STUDENT

PROJECT INVESTIGATING 'MICRO MONUMENTS' WITHIN THE BUILT ENVIRONMENT

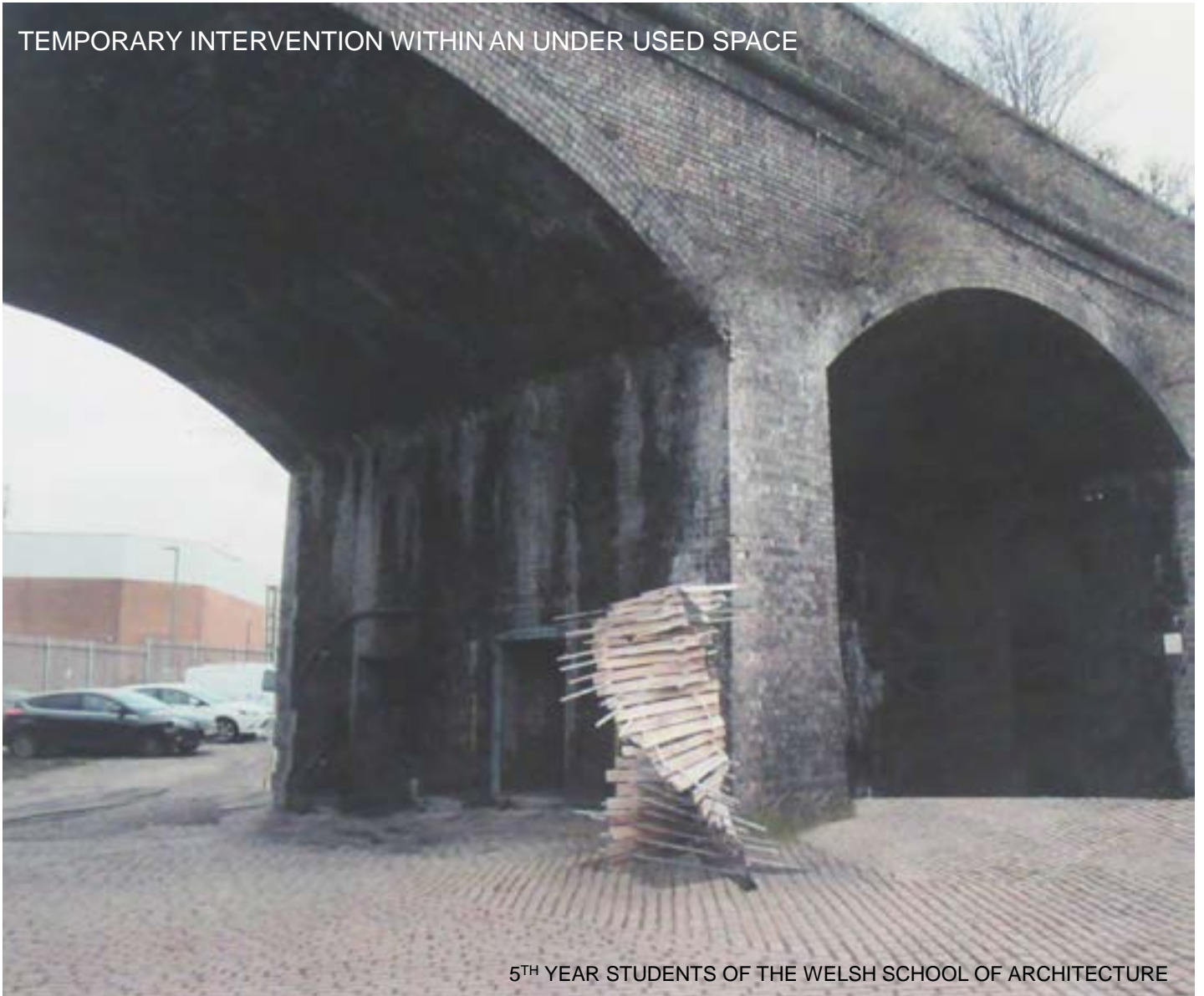


JESSICA MACKRIEL- SECOND YEAR STUDENT

COMMUNITY CHALLENGE

INSPIRATIONAL INTERVENTIONS
LEARNER RESOURCE 6

TEMPORARY INTERVENTION WITHIN AN UNDER USED SPACE



5TH YEAR STUDENTS OF THE WELSH SCHOOL OF ARCHITECTURE



HANGING GEOMETRIC INSTALLATION

SECOND YEAR STUDENTS OF THE WELSH SCHOOL OF ARCHITECTURE

PLACE MAKING



REISHIN WATABE – SECOND YEAR STUDENT

TEMPORARY INTERVENTION



5TH YEAR STUDENTS OF THE WELSH SCHOOL OF ARCHITECTURE



TEMPORARY STRUCTURE

REISHIN WATABE – 2ND YEAR STUDENT

USING RECLAIMED MATERIALS



5TH YEAR STUDENTS OF THE WELSH SCHOOL OF ARCHITECTURE

LOCAL IDENTITY



CAITLIN MULLARD – 2ND YEAR STUDENT

STREET ART



CAITLIN MULLARD – 2ND YEAR STUDENT

RECLAIMED MATERIALS
LINKING WITH HISTORICAL PAST



REISHIN WATABE – 2ND YEAR STUDENT

GLOBAL CITIZENSHIP CHALLENGE

BOAT MAKING ACTIVITY

AIMS & OBJECTIVES

Though this is under the title 'Architecture' this is not exclusive to those interested in architecture, and does *not require specialist knowledge*.

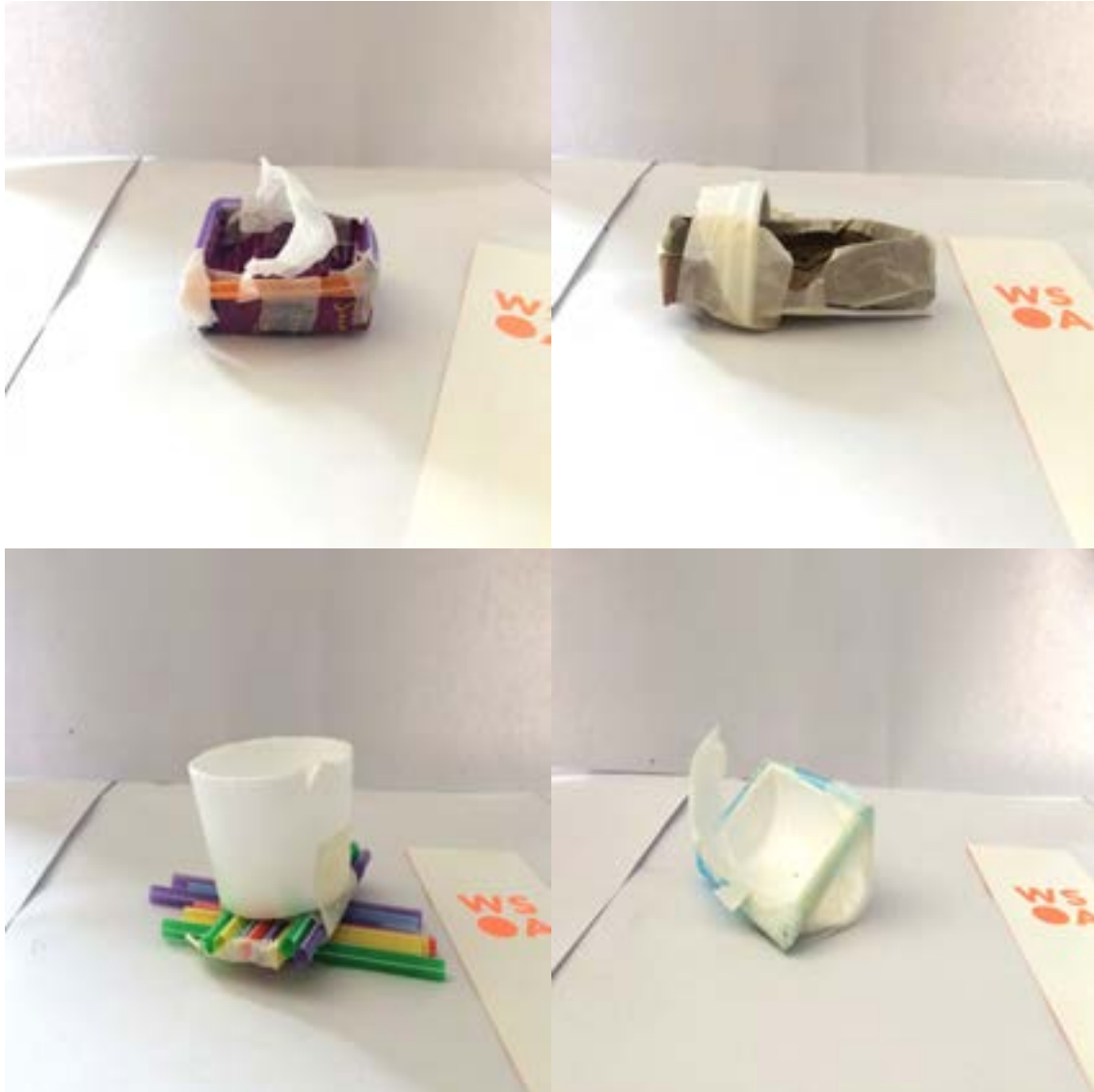
- This will directly relate to *Critical Thinking and Problem Solving* as students will constantly be assessing their own creations: 'will it work', and why not. By making this a competitive exercise students will naturally assess theirs with other creations also and reflect.
- The quick generation of ideas and requirement to think holistically will meet the *Creativity and Innovation* skills.
 - Giving a time limit (whether be 10 minutes or duration of class), will allow to students to develop their *Personal Effectiveness*, managing the time and resources efficiently.
- Allowing students to try the exercise again will further develop all these skills as students will *have learned from their mistake and successes*.
 - This is ideal as a lesson hook or taster. It will make students begin to think more open minded and critically in future lessons/ activities.

YOUR TASK

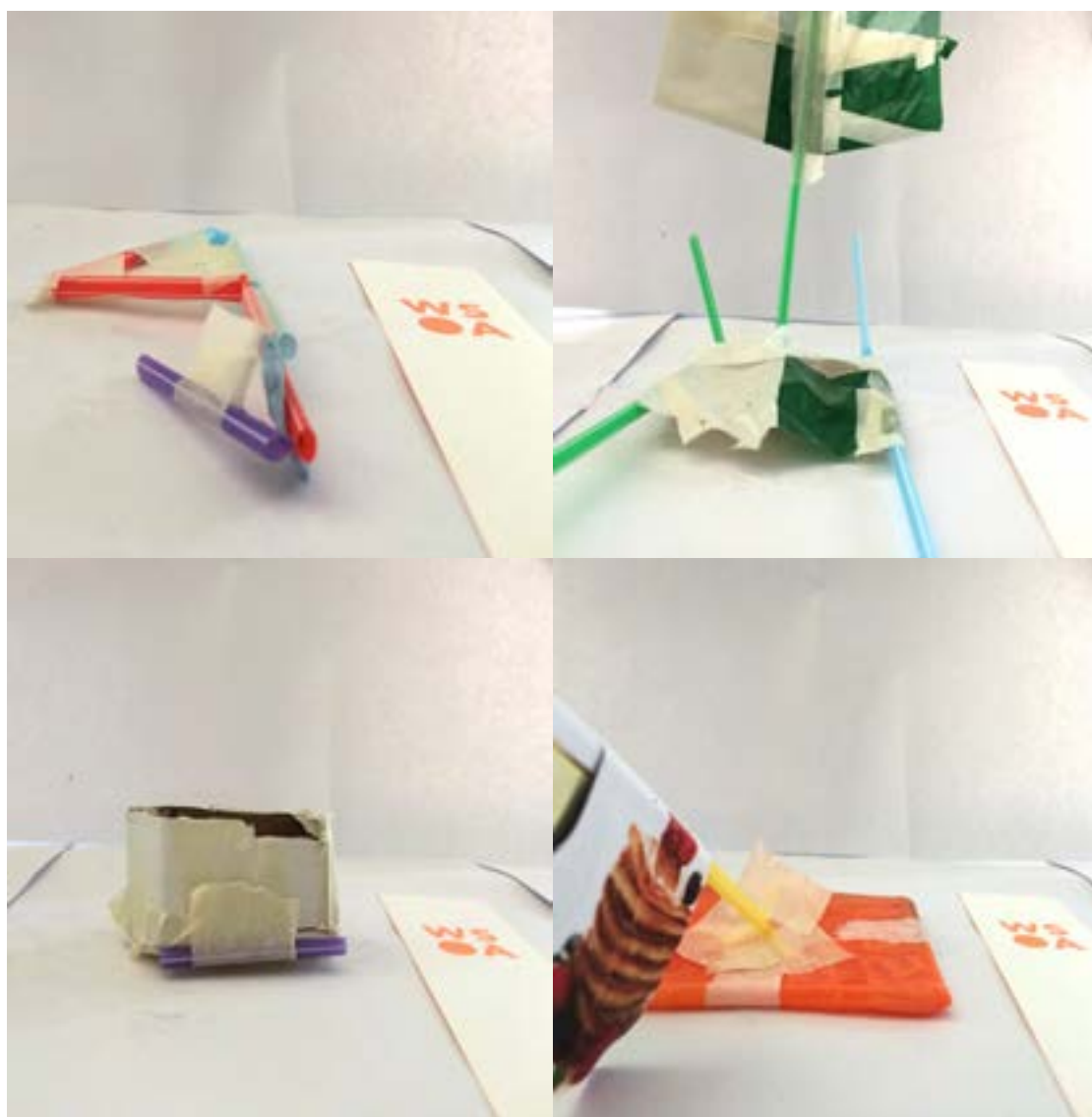
Create a small boat out of reclaimed materials*. It must float, move from one side of the tray to the other via a wind source (i.e. a fan), and hold a predetermined weight.

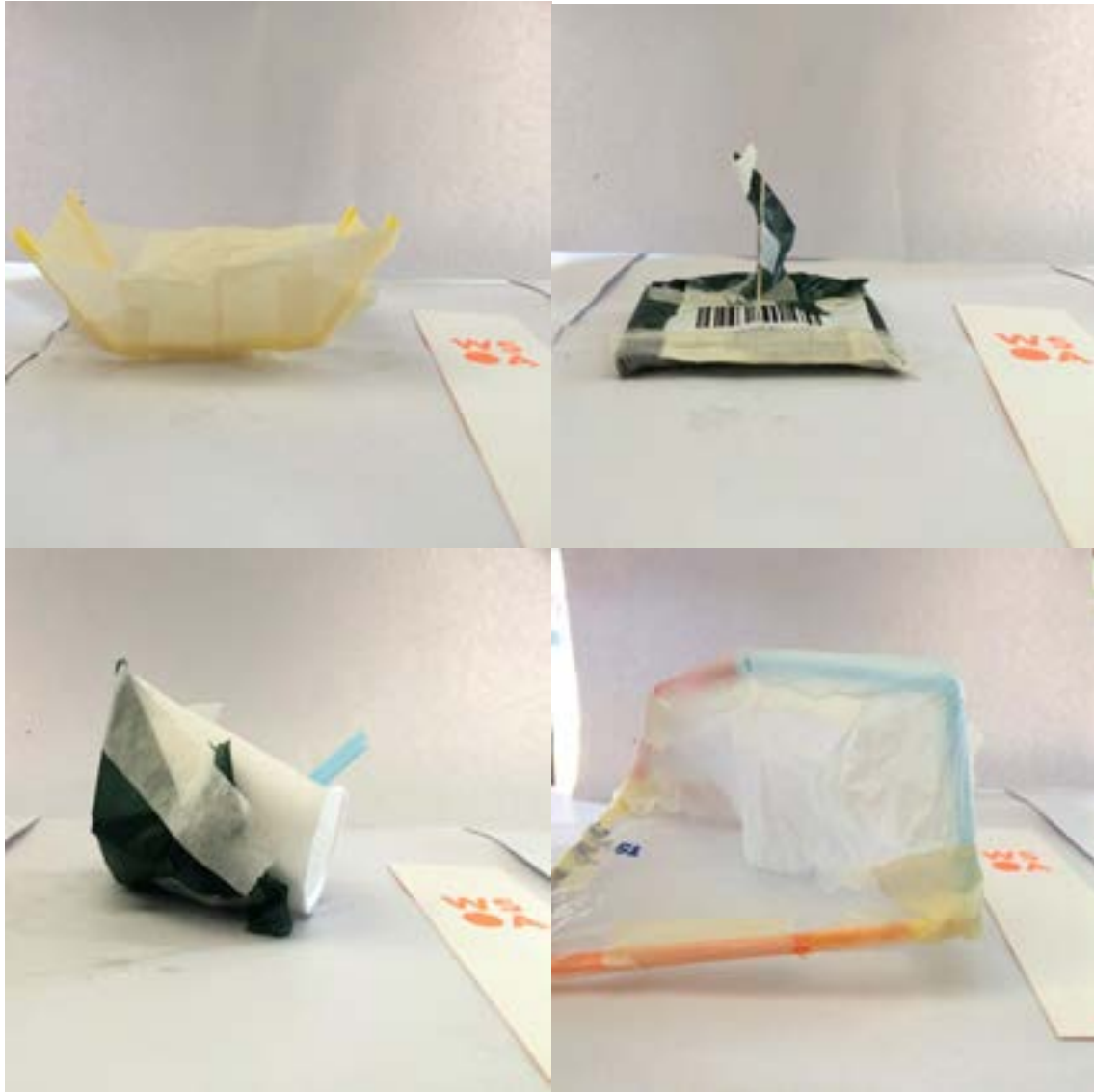
The winner is the lightest boat that meets all these requirements.

*(e.g. Newspaper, cardboard, flyers, used bottles etc. Scissors, tape and string for bonding).

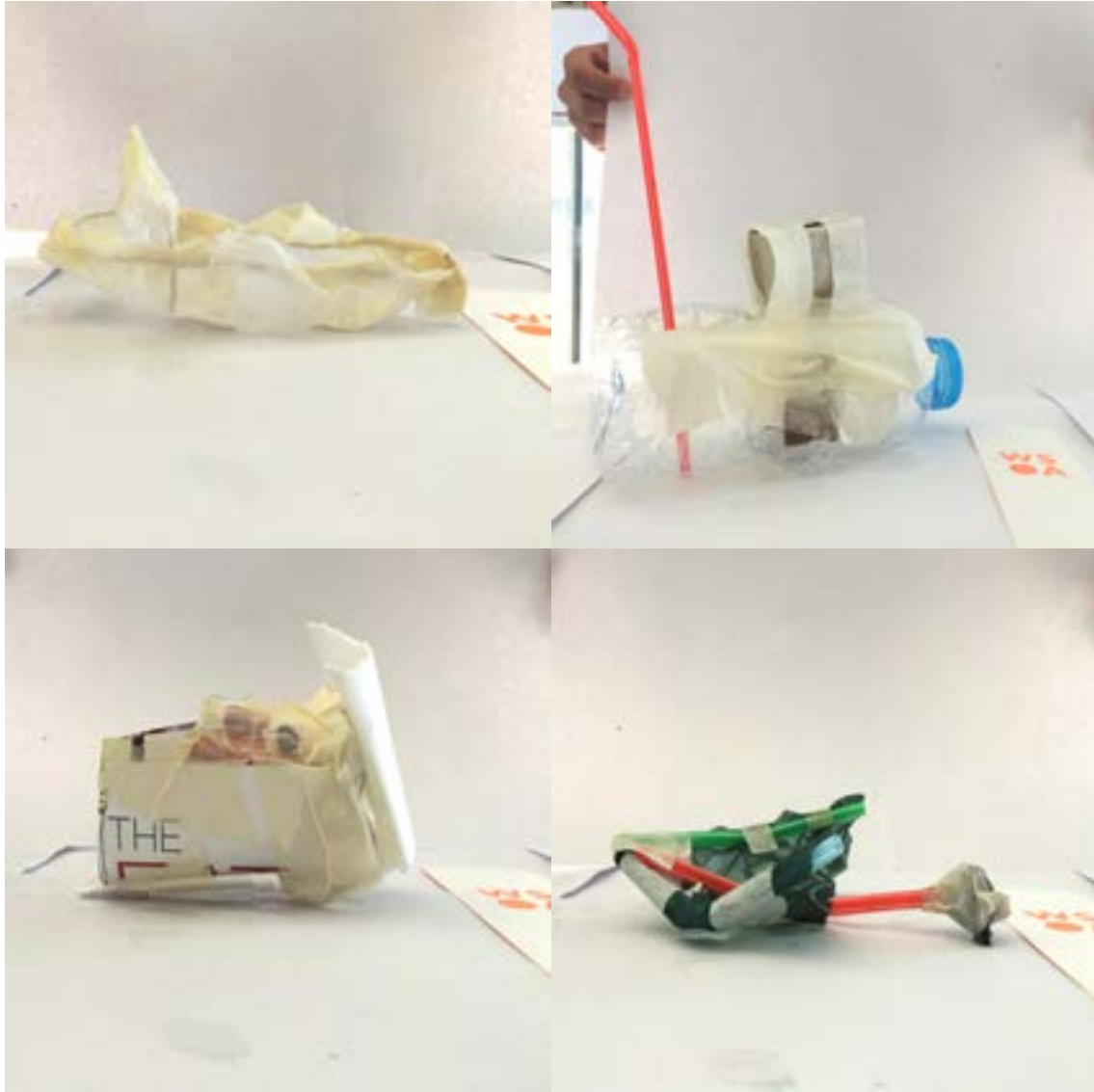




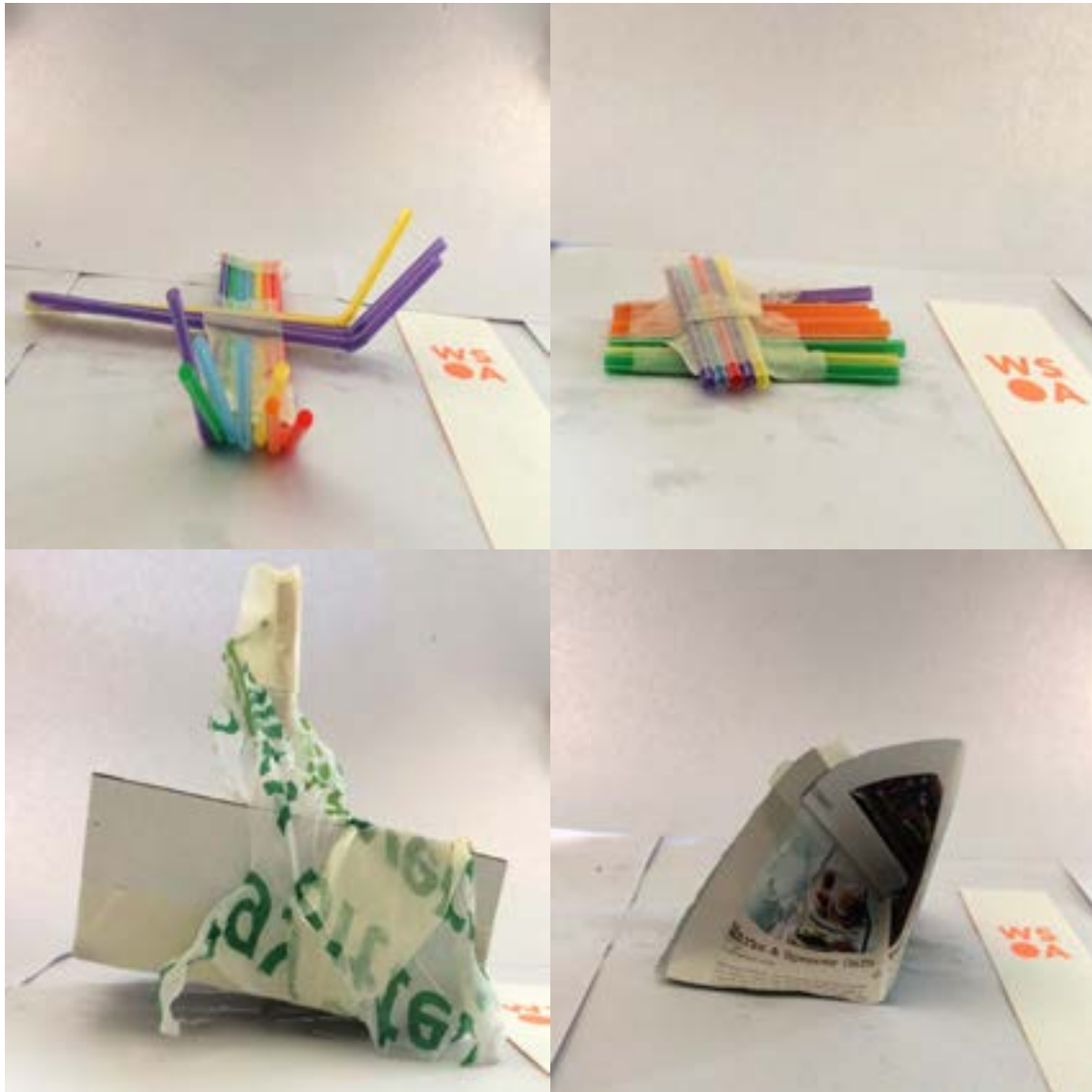


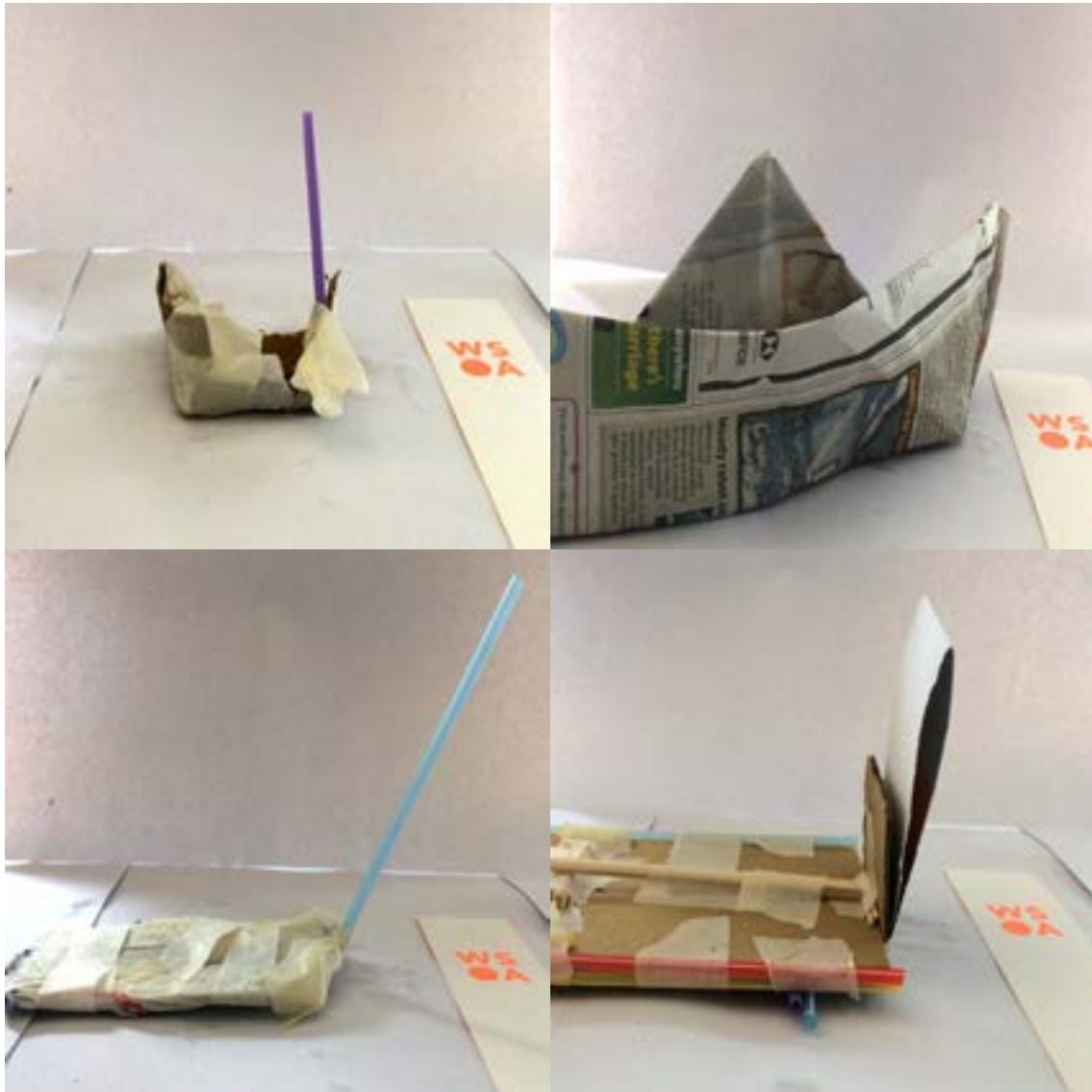












INDIVIDUAL PROJECT

SUSTAINABILITY BRIEF

Individual Project Proposal



Advanced Welsh Baccalaureate

The Proposal should be submitted to:
 Caroline Morgan,
 Welsh Baccalaureate Framework Manager,
 WJEC
 Phone: 02920265319
 e-mail: caroline.morgan@wjec.co.uk



UNIVERSITY: Cardiff University	PROPOSAL SUBMITTED BY: Harrison Marshall
SCHOOL/FACULTY/DEPARTMENT: Architecture	PHONE: e-mail: harry-m@hotmail.co.uk
DATE: 28th June 2015	JOB TITLE: Intern/Student

The Project Proposal should be written in such a manner that allows learners to formulate their own project title.

Everything that we need for our survival and well-being ultimately depends on the natural environment. There is a huge rise in sustainable architecture that seeks to combat the overconsumption of the earth's resources.

Many different approaches have been made: from the innovative use of recycled cardboard in Shigeru Ban's Christchurch Cathedral, to the housing development BedZED that was designed to create zero carbon emissions.

However not all buildings live up to their claims, many famous buildings have come under criticism due to their underperformance such as the natural ventilation system in 'The Gherkin' by Foster + Partners.

When it comes to more efficient mechanical systems there is often a 'bolt on' approach, but this inevitably leads to some drawbacks. What's gained in one area is lost elsewhere as the result of other unanticipated interactions.

Sustainable architecture can not be an afterthought or an add on, it needs to be a fundamental integration into the design right from the initial ideas and concepts.

Acceptance of Proposal

The above Project Proposal is hereby accepted as an addition to the Project Proposal Bank on WJEC website.

Authorised By _____

Date of Acceptance _____

INDIVIDUAL PROJECT

THEORY BRIEF

Individual Project Proposal



Advanced Welsh Baccalaureate

The Proposal should be submitted to:
 Caroline Morgan,
 Welsh Baccalaureate Framework Manager,
 WJEC
 Phone: 02920265319
 e-mail: caroline.morgan@wjec.co.uk



UNIVERSITY	Cardiff University	PROPOSAL SUBMITTED BY	Reishin Watabe
SCHOOL/FACULTY/DEPARTMENT	Architecture	PHONE	
		e-mail	wataber@cardiff.ac.uk
DATE	26 June 2015	JOB TITLE	Intern/Student

The Project Proposal should be written in such a manner that allows learners to formulate their own project title.

Architecture is often thought of as the putting together of heavy and old building, of great and dusty landmarks from a bygone era.

Indeed the original meaning of the word 'architect' meant that of a 'master builder', a singular man to lead his cohort to erect grand and beautiful structures.

From the Great Pyramids, the Parthenon, Sainte-Chappelle, St Pauls Cathedral to more recent examples like the Farnsworth House, architects have long sought to provoke inspiration and awe in their creations. Some, such as the Bilbao Guggenheim, use sculpture to inspire, others like Villa Le Lac have a more subtle warmth in their creation.

The art of architecture however, has never been about the construction of structures, the building of a wall, or the installation of stained glass windows.

Architecture is the art - the craft - of invoking space: of tempering atmosphere.

Acceptance of Proposal

The above Project Proposal is hereby accepted as an addition to the Project Proposal Bank on WJEC website.

Authorised By _____

Date of Acceptance _____

INDIVIDUAL PROJECT

CONTEXT

CONTEXT

Contextual architecture responds to its surroundings by observing what is already there. Every site has something unique about it that can evolve into a concept and influence a design. A building can be contextual from responding to something as small as the leaves falling in Autumn to the city as a whole or even the country. It can be something physical, cultural or historical. Contextual Architecture gives the building a sense of 'belonging'. A space that blend seamlessly into its environment, not only maintaining the context, but also enhancing it.

JEWISH MUSEUM BERLIN - DANIEL LIBESKIND

The Jewish Museum Berlin, which opened in 2001, exhibits the social, political and cultural history of the Jews in Germany from the fourth century to the present, displaying the repercussions of the Holocaust. The Museum responds to the cultural history of its surroundings by plotting the addresses of prominent Jewish and German citizens on a map of pre-war Berlin and joining the points to form an "invisible matrix" which is the bases of the form and window placements.

The space doesn't just display the exhibits but also creates a unique experience for the visitors. Cavernous voids run vertically through the building referring to "that which can never be exhibited when it comes to Jewish Berlin history: Humanity reduced to ashes." - Daniel Libeskin

Studio Libeskin - <http://libeskind.com/work/jewish-museum-berlin/>

Jewish Museum Berlin - <http://www.jmberlin.de/main/EN/04-About-The-Museum/01-Architecture/01-libeskind-Building.php>

ArchDaily - <http://www.archdaily.com/91273/ad-classics-jewish-museum-berlin-daniel-libeskind>

GREAT (BAMBOO) WALL - KENGO KUMA AND ASSOCIATES

The project was to create an environmentally sustainable commune in a forest adjacent to the Great Wall of China. Kengo Kuma's Bamboo Wall responds to the Great Wall of China in many different ways from the idea of leaving the land intact and letting the building conform to it to the use of a bamboo filter to represent a connection of two worlds rather than the separation created by the Great Wall.

As explained on the Kengo Kuma and Associates website:

'Our first aim was to learn from the formality of the Great Wall. We were constantly attracted to the fact that the Great Wall has never been an isolated object. The formal quality of it running almost endlessly along the undulating ridgeline without being isolated from the surrounding environment was the nature we were attracted. That appealed to us as a criticism toward the conventional form of 'architecture' that tends to seek to be an isolated object among the environment. Thus our intention was to apply this nature of the Great Wall to the act of dwelling. This is what the house is titled 'WALL' for, instead of 'HOUSE'

As for the material, we used bamboo as much as possible, since it's considered as having a significant meaning among Chinese and Japanese cultures. Depending on density of bamboo and its each diameter, it offers a variety of partitioning of space. Making the most of that characteristics, we decided to place a bamboo WALL, a layer of bamboo along the site's inclination just like the Great Wall. The Great Wall in the past partitioned off two cultures, but this BAMBOO WALL would not only partition but also unite life and culture in various manners as the Great Wall in particles.'

Kengo Kuma and Associates - <http://kkaa.co.jp/works/architecture/great-bamboo-wall/>
Chinese Architects - http://www.chinese-architects.com/en/projects/7443_Great_Bamboo_Wall
Commune by the Great Wall - <http://www.communebythegreatwall.com/en>

OTHER RESOURCES

Alvar Aalto:
http://www.alvaraalto.fi/index_en.htm
<http://www.designboom.com/history/aalto.html>

David Chipperfield
<http://www.hepworthwakefield.org/about/architecture/>
<http://www.davidchipperfield.co.uk/projects/>
http://www.davidchipperfield.co.uk/project/am_kupfergraben_10

Students are encouraged to conduct their own research into what they find interesting and appealing within their topic.

INDIVIDUAL PROJECT

MATERIALITY

MATERIALITY

Materiality in architecture is the application of specific materials within the design of a building. It can often be part of the initial concept and can be chosen before there is even a design. The materials of a building play a huge role in the experience of the final space, they change the colour, atmosphere, texture and light. They can relate to it's context and add to a buildings sustainability. Therefore materials should not be an afterthought but be a big part in the design process from the very start.

BRUDER KLAUS FIELD CHAPEL - PETER ZUMTHOR

Peter Zumthor's Chapel experiments with timber and concrete in a completely new way. Its initial frame was constructed from 112 local pine trees, forming the triangular interior shape. Concrete made using local sand and gravel was then applied to the outside of the timber pine tree structure and built up in 50cm-thick slabs to a height of 12 metres over the course of 24 days.

Once the concrete was in place, the chapel's wooden innards were set alight, the pine burning away slowly over the course of three weeks. The floor was lined with molten lead, and the steel tubes that held the concrete together while it was setting had glass beads fixed to the ends allowing daylight into the chapel's dark centre.

<http://uk.phaidon.com/agenda/architecture/articles/2015/february/04/sacred-stories-bruder-klaus-field-chapel/>

<http://www.archdaily.com/106352/bruder-klaus-field-chapel-peter-zumthor>

BRICK

‘As one of the most ubiquitous forms of construction, it can sometimes be easy to overlook the humble brick. However, this prosaic building method can also be one of the most versatile materials available to architects, thanks to the experimentation of countless architects who, for centuries, have worked to create new forms of expression with the simple material. We celebrate architects who, with their architectural classics, have expanded the possibilities of brick craft: Antoni Gaudí’s fantastical vaulting at Colònia Güell and Alvar Aalto’s experimental brick patterning at his house in Muuratsalo; the powerful brick piers of Kevin Roche and John Dinkeloo’s Knights of Columbus Building and the Catalan vaults of Porro, Garatti and Gattardi’s National Arts School of Cuba; and finally, Louis Kahn and his all-brick fortress for the Indian Institute of Management.’

ArchDaily (<http://www.archdaily.com/593371/ad-round-up-classics-in-brick>)
<http://www.andotadao.org/>

MUURATSALO EXPERIMENTAL HOUSE / ALVAR AALTO

Alvar Aalto’s experimental home had the main focus of exploring new and innovative ways of using and stacking different types of brick. There are more than fifty different types arranged in various patterns. Not only did Aalto test the aesthetics of each but also the way in which they reacted to the harsh climate. The surrounding landscape is filled with boulders and stones covered with moss, and along with the bilberry and lingonberry bushes they add a beautiful contrast to the brick and white colours of the house.

OTHER RESOURCES

<http://www.archdaily.com/catalog/us/>
<http://www.dezeen.com/tag/corten-steel/>

Students are encouraged to conduct their own research into what they find interesting and appealing within their topic.

INDIVIDUAL PROJECT

SCULPTURE

SCULPTURE

Since architecture is a profession regarding a built entity, architecture and sculpture have always had a strong relationship. Sculpture in architecture refers to buildings in which its built form is visually stimulating as if an artistic sculpture. Sculpture has changed in recent times due to the expanding possibilities of new technology, with more outrageous and ambitious creations possible than ever before. While some argue that the age of sculptural architecture is coming to a close, its expensive frivolity is unpopular with critics, it is undeniable that sculpture has significantly affected architecture in the 21st century.

GUGGENHIEM BILBAO – FRANK GEHRY

Seeking to revitalise this relatively unknown area in Spain, the Guggenheim Bilbao was imagined to increase pedestrian flow between key art museums. Gehry generated the geometry of the building from his sculptor's eye through model making and then used specialist 3D laser scanning technology to realise it into a piece of architecture.

Controversial and often noted as too whimsical, the building was however successful on putting Bilbao on the map. While the building is said to be insensitive with its size, the beckoning view from the street suggests that there was some careful consideration in its relation to the city.

Furthermore, the building considers its position on the water-front well to create a fascinating way to experience this multi-angular piece.

LONDON AQUATICS CENTRE – ZAHA HADID

Built for the London Olympics 2012, the aquatics centre is inspired by the rippling of water. Hadid's work often focuses on fluidity and it is thus unsurprising that they were chosen for this project. Hadid's practice often uses a myriad of computer programs to develop their form for the buildings, using a mixture of scripting as well as typical modelling.

The completed design as it currently stands is pleasing to the eye, and meets the needs required. However, the initial opening of the building included temporary extra seating that were not well conceived as the height of these seats combined with the dip of the ceiling meant that many people were left unable to see the sporting. Despite her controversies, with the Olympics focusing on the theme of 'legacy', one cannot refute that Zaha Hadid has certainly had a heavy hand in the legacy of future architecture.

APPENDIX

NOTABLE ARCHITECTS

Santiago Calatrava
Norman Foster
Richard Rogers
Renzo Piano
Kengo Kuma
Shigeru Ban
Buckminster Fuller
Otto Frei
Joseph Paxton
Ludwig Mies van der Rohe

NOTABLE BUILDINGS

Guggenheim Museum Bilbao, Bilbao, Frank Gehry
Heydar Aliyev Cultural Center, Baku, Zaha Hadid
Milwaukee Art Museum, Milwaukee, Santiago Calatrava
The 1967 International and Universal Exposition, Montreal, Otto Frei
CCTV Headquarters, Beijing, Rem Koolhaas

KEY QUESTIONS/PROMPTS TO HELP IN INVESTIGATIONS

How does the outside relate to the inside? Are they two different things or related?

Is it sculptural in its skin, bones, or a combination? What effect does this have?

How do you think the building(s) was constructed?

Has the use of materials been considered alongside the form?

Is the sculptural aspect of the building whimsical or can you detect a theory or concept behind it?

How has the structure been resolved with the sculptural aims?

ADVICE FOR LEARNERS

Sculpture may be pleasing to the eye, and in an age of imagery and mass media very successful, but bear in mind that there is someone(s) who is paying the vast sums of money. Is it worth spending on so much that only looks nice but has no real function?

Sometimes a building's form or sculptural qualities are not easily understood, if this is the case, try looking into it to see if there was a deeper meaning behind it. If there was, do you think they were successful in what they were trying to do? If not, do you think it is responsible to be so arbitrary? Is beauty part of the function?

There is a long running architectural discussion about whether 'Form Follows Function', try thinking about this while researching, it may change from building to building, or you may have a distinct answer.

INDIVIDUAL PROJECT

STRUCTURE

STRUCTURE

Structure in architecture, at its core, is the method of allowing a building to stand up safely. Thinking of what materials to use, and in what way adds strength and stability to designs. Furthermore, smart architects will incorporate structural thinking in regards to construction so as to minimize or make easier construction work – therefore ensuring an architecture of higher quality. However, structure is not just a pragmatic requirement in architecture, but can be used expressively to evoke a certain feeling.

Pompidou Centre - Richard Rogers + Renzo Piano

Designed in protest of the Parisian Government, Rogers and Piano sought to make a completely new architecture in the centre of Paris. The idea for this museum was to have all structure and servicing (e.g plumbing, electricity, ventilation) on the outside, and in this way allow the interior to be a completely free of obstructions. By having an interior free of any columns the museum was able to have a truly flexible space they could configure in any way, while the exterior servicing allowed these systems to be accessed easily when repairs were necessary. Although highly controversial on its opening, it is now a loved museum and is a key building to spark the high-tech movement.

Farnsworth House – Ludwig Mies van der Rohe

Widely known by architects and architectural historians, this is one of the most influential buildings of the 20th century. Mies believed in steel as the new material of the century, and much of his life's work was in an attempt to further the artistry and craft of steel. The Farnsworth House structure is simple - as per Mies' fabled mantra 'Less is more' – and only uses universal steel beams and columns. The welding that connects each beam to the next was done carefully and then sanded to remove traces of the welding (usually you can see where it has been welded due to a glue like texture on the edge of the joint). In this way the structure seems to be magically joined together, leading to a beautiful structural system.

APPENDIX

NOTABLE ARCHITECTS

Santiago Calatrava
Norman Foster
Richard Rogers
Renzo Piano
Kengo Kuma
Shigeru Ban
Buckminster Fuller
Otto Frei
Joseph Paxton
Ludwig Mies van der Rohe

NOTABLE BUILDINGS

HSBC Headquarters, Hong Kong, Norman Foster
Pompidou Centre, Paris, Richard Rogers + Renzo Piano
Welsh Senedd, Cardiff, Richard Rogers
Lloyds Building, London, Richard Rogers
Pompidou Centre Metz, Metz, Shigeru Ban
Farnsworth House, Plano, Mies van der Rohe

KEY QUESTIONS/PROMPTS TO HELP IN INVESTIGATIONS

What materials have they used and why do you think?
How are things connected? Is it bolted, welded, layered and why (do you think)?
Where is the weight of the building going/ where is it being held up the most?
Is everything as meets the eye, do you think that it is all structural?
Is structure beautiful?
What does it mean and how is it perceived when something is called 'heavy' or 'light'?
Can you detect a pattern in the building? Is there a strategy they have employed?
Can you see 'skin' or 'bones' in the building or is a combination or neither?
Has the structure taken into account the construction process?

ADVICE FOR LEARNERS

Structure is an intuitive thing to understand. Think of things that you have experienced in your own experience. You can imagine the strength of a pencil as opposed to a metal pen. To make a house of cards is difficult –but what if you cello taped them together? Try and relate these things as you look at the way in which materials are put together in architecture. Try and examine buildings you usually go to and ask questions. Where is the weight of the building going, what is the purpose of a particular column or beam?

INDIVIDUAL PROJECT

SUSTAINABLE ARCHITECTURE

SUSTAINABLE ARCHITECTURE

THE GLOBAL PROBLEM

The world's urban waste mountain is a silent problem that is constantly growing, with more than 3.5 million tonnes produced every single day. This amounts to more than 1.3 billion tonnes a year. If not properly tackled soon, public health and the environment will be at risk. The problem is one that concerns everyone and is the result of the way we produce and consume.

Dumpsites are often alongside rivers or by the sea and therefore contribute directly to water pollution; erosion from coastal dumpsites is one source of marine litter. The waste is compiled of everything you can imagine from food, scrap metal, unwanted timber, to hazardous waste. One third of all food produced in the world ends up as waste, with food wasted by consumers globally valued at more than £259bn per year. Last year, 41.8 million tonnes of electrical waste, mostly fridges, washing machines and other domestic appliances at the end of their life were discarded.

With this increasingly concerning global problem, it is becoming more and more important to reduce, reuse, and recycle.

SUSTAINABILITY IN ARCHITECTURE

Everything that we need for our survival and well-being ultimately depends on the natural environment. There is a huge rise in sustainable architecture that seeks to combat the overconsumption of the earth's resources.

Many different approaches have been made: from the innovative use of recycled cardboard in Shigeru Ban's Christchurch Cathedral, to the housing development BedZED that was designed to create zero carbon emissions.

CARDBOARD CATHEDRAL

The Cathedral was designed by Shigeru Ban as a temporary replacement for the city's former Anglican cathedral, which was destroyed by the earthquake that struck the city in February 2011. The building features a triangular profile constructed from 98 equally sized cardboard tubes.

Shigeru Ban has used cardboard on a number of pavilions and structures in recent years, particularly on disaster relief projects. Other examples include a temporary gallery in Moscow with cardboard columns and a cardboard pavilion at the IE School of Architecture and Design in Madrid. This use of recycled cardboard sets a great example of creating and using a sustainable material as well as using what would have otherwise been waste. "I'm just interested in using materials without wasting it. [...] Paper is a very inexpensive material which you can obtain anywhere in the world."

Note: Show images of the Cardboard Cathedral and if there is time show the TED talk from Shigeru Ban as linked to in 'Resources'

Prompting questions:

What do you think of the design? Aesthetically? Technically? Sustainably?
Are there any drawbacks from Ban's use of cardboard over traditional materials?
Can you think of other uses for cardboard in Architecture?
What about other recyclable materials?

Encourage the learners to be imaginative, these ideas don't have to be technical or buildable.

BedZED

BedZED is the UK's largest mixed use, carbon-neutral development. When it was built in 2002, it set new standards in sustainable building. It was designed to achieve big reductions in climate changing greenhouse gas emissions and water use making it easier for those living there to have a greener, lower impact lifestyle, relying less on private cars and producing less waste.

BedZED's houses and flats make use of passive solar heating from the extensive south facing glazing as well as being highly insulated. The distinct colourful wind cowls in the roof are to ventilate the homes; the outside air is drawn in and the stale air is extracted out while simultaneously exchanging the heat from the inside air to the fresh air as to create minimal heat loss.

A gas-fired communal boiler supplies hot water for the entire development through an underground heating system and the concrete used in the blockwork stores heat in the walls, floor and ceiling keeping the temperature even throughout the year. Photovoltaic (PV) panels on the roof and facade provide some of the electricity with the surplus exported to the local grid. Where possible, BedZED was built from natural, recycled or reclaimed materials. All wood was approved by recognised environmental organisations, ensuring that it was sustainably sourced.

Note: Show images of BedZED

Prompting questions:

What do you think of the design? Aesthetically? Technically? Sustainably?
How does it compare to Shigeru Ban's Cathedral?
What are key components to making a building sustainable?

BIBLIOGRAPHY AND RESOURCES

THE GLOBAL PROBLEM RESOURCES

ISWA - <http://iswa2015.org/gwmo>
WORLD BANK - <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:23212575~pagePK:34370~piPK:34424~theSitePK:4607,00.html>

THE NEW CLIMATE ECONOMY

http://static.newclimateeconomy.report/wp-content/uploads/2015/02/WRAP-NCE_Economicenvironmental-gains-food-waste.pdf?utm_content=buffer01c20&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer

THE GUARDIAN

<http://www.theguardian.com/environment/2015/feb/26/world-leaders-urged-to-tackle-food-waste-to-save-billions-andcut-emissions>
- <http://www.theguardian.com/environment/2015/apr/19/worlds-mountain-of-electrical-waste-reaches-new-peak-of-42m-tonnes>

DEPARTMENT FOR ENVIRONMENT, ROOD AND RURAL AFFAIRS

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/422618/Digest_of_waste_England_-_finalv2.pdf
Cardboard Cathedral Resources
TED - http://www.ted.com/talks/shigeru_ban_emergency_shelters_made_from_paper?language=en

THE ARCHITECTURAL REVIEW

<http://www.architectural-review.com/buildings/cardboard-cathedral-by-shigeru-ban-in-christchurchnew-zealand/8654513.article>

DEZEEN

<http://www.dezeen.com/2009/11/02/tokyo-designers-week-interviews-shigeru-ban/>
<http://www.dezeen.com/2013/08/06/shigeru-ban-completes-cardboard-cathedral-in-christchurch/>

BedZED

ZED FACTORY - <http://www.zedfactory.com/zed/?q=node/102>
BIOREGIONAL - <http://www.bioregional.com/bedzed/>
PEABODY - <http://www.peabody.org.uk/about-us/sustainability/case-study-bedzed>

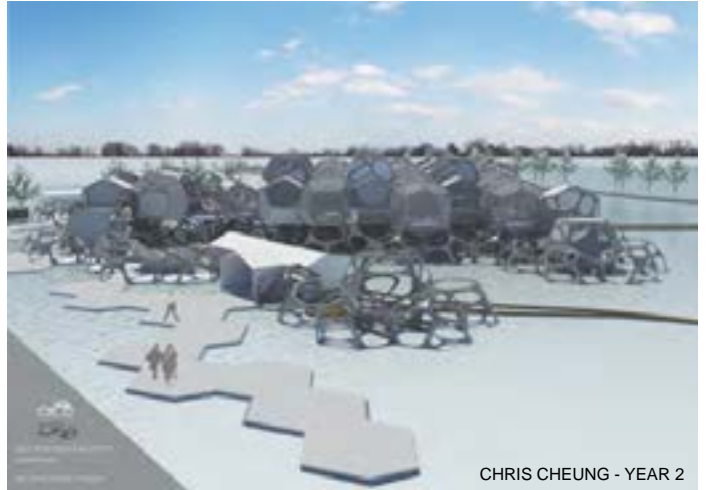
INDIVIDUAL PROJECT

ATMOSPHERE AND LIGHT

WHAT IS ARCHITECTURE?



ALDEN CHING - YEAR 2



CHRIS CHEUNG - YEAR 2



HARRY MARSHALL - YEAR 2



ANDRZEJ BAK - YEAR 2



HARRY MARSHALL YEAR 2

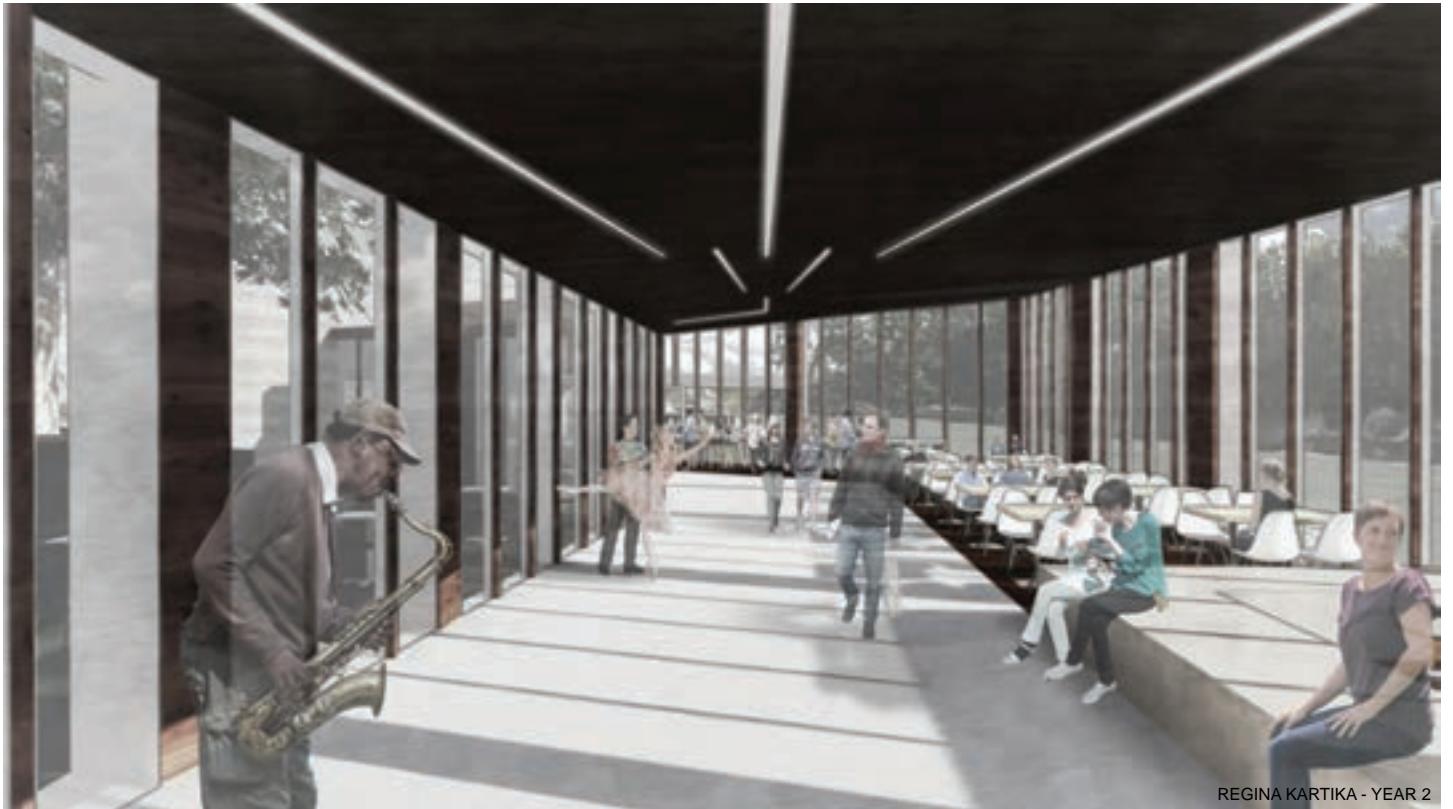


REISHIN WATABE - YEAR 2



FROM A CITY
TO A
JUNCTION





REGINA KARTIKA - YEAR 2

ARCHITECTURE
MAKES PLACES FOR
PEOPLE

*"While artists work from the real to the abstract, architects must work
from the abstract to the real."*
Steven Holl

CONTEXT



MATERIALITY



STRUCTURE



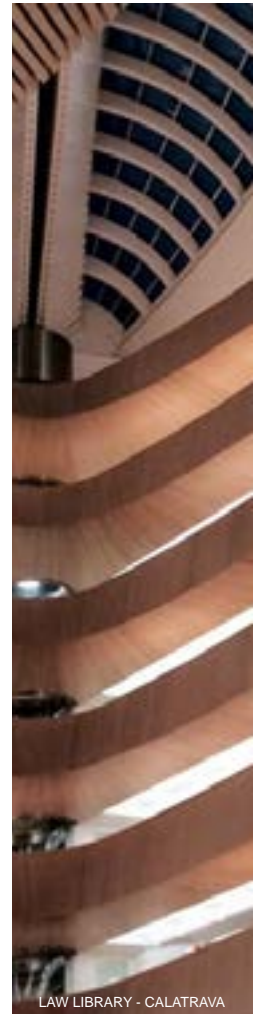
ATMOSPHERE



LIGHT



SCULPTURE

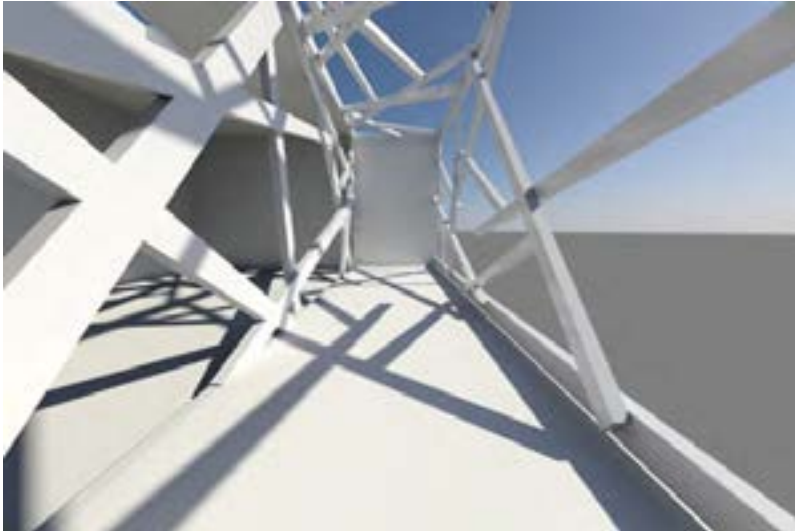


ATMOSPHERE



LIGHT





LIGHT IN ARCHITECTURE

"The Sun never knew how great it was until it hit the side of a building." Louis Kahn



Light is vital in every aspect of a design, it takes into account human activity, glare, shadow, natural and artificial light, it's colour, sustainability, and the scheme's conceptual and technical aims.

REISHIN WATABE - YEAR 2

HOW ARE THESE SPACES DIFFERENT?



HOLY CROSS CHURCH - WALTER FORDERER



KUNSTHAUS - PETER ZUMTHOR



ARIEF AFANDI - YEAR 5

LIGHT CREATES ATMOSPHERE

Light defines a space, it creates the atmosphere that has an emotional effect on people. A place is built for people to use and experience.

"My buildings should have an emotional core - a space which, in itself, has an emotional nice feeling." Peter Zumthor

"...Daylight, the light on things, is so moving to me that I feel almost a spiritual quality. When the sun comes up in the morning – which I always find so marvellous... and casts its light on things, it doesn't feel as if it quite belongs in this world. I don't understand light. It gives me the feeling there's something beyond me, something beyond all understanding."

(Atmospheres, p. 61). Peter Zumthor

DESCRIBE THIS SPACE



REISHIN WATABE - YEAR 2



DESCRIBE THIS SPACE

SERPENTINE PAVILION - SELGASCANO

DESCRIBE THIS SPACE



YOUR TASK

- You will be split into 6 groups.
- Each group will conduct their own research into one of the following categories.
- You will be given some resources, but you are encouraged to research what interests you as a group.

CONTEXT



MATERIALITY



STRUCTURE



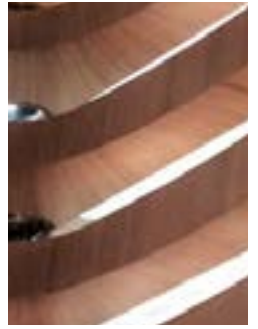
ATMOSPHERE



LIGHT



SCULPTURE



- Following your research you shall prepare a short presentation (maximum of 5 minutes).
- This should convey your findings to the rest of the class in a clear and engaging way.

AN
INSPIRATION BOOKLET
OF ARTEFACTS

TASK 2 OF THE
INDIVIDUAL PROJECT

AIMS & OBJECTIVES

Though this is under the title 'Architecture' this is not exclusive to those interested in architecture, and does not require specialist knowledge.

- Inspire students to take initiative to conduct their own research into personal interests and hence activating the *Planning and Organisation* as well as *Personal Effectiveness* Skills.
- The challenge of turning research findings into a visual artefact that conveys their ideas with very minimal text will meet the *Creativity and Innovation* skills.
- Encourage visual presentation skills and ability to orally persuade and discuss/argue
 - This will help with *employability* and give students *more confidence with their own work*.
 - Presentation skills will aid those applying to *architecture with portfolios*.
 - Using media will encourage the *Digital Literacy* Skill.
 - Allowing students to use both oral and visual presentation methods to communicate and defend their ideas will help with *Critical Thinking and Problem Solving*.

In regards to the artefact(s), the process of design, make and test will provide constant re evaluation of work, resulting in an impressive array of process artifacts at the end of the project. This will allow others to identify the themes of the students work as well as track their *thought process*.

YOUR TASK

You will pursue further research in your subject area (e.g. Context, Materiality, Structure, etc) in your own time focusing on what you've found most interesting.

From this you will produce an artefact of any medium (drawing, model, collage, film, photography, etc) and a 50 word description outlining the ideas behind it. The artefact should represent your research findings. You must be able to critically justify your thinking and artefact.

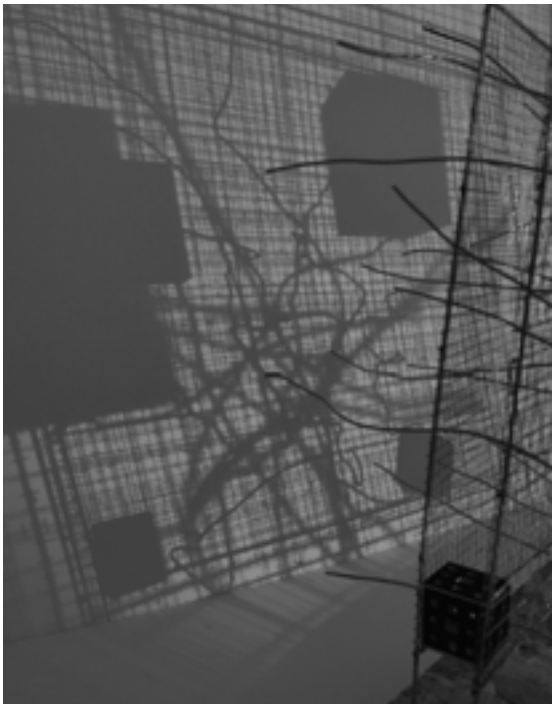
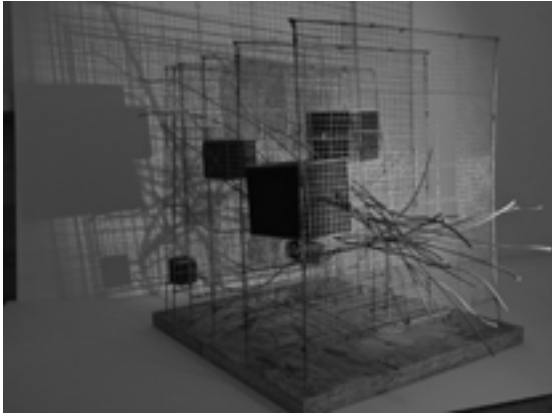
You will then display your artefact and 50 word description in an exhibition format allowing the whole class to see the work of others. Students will then be able to ask questions to gain more information about each artefact and the thought process behind it from the creator.

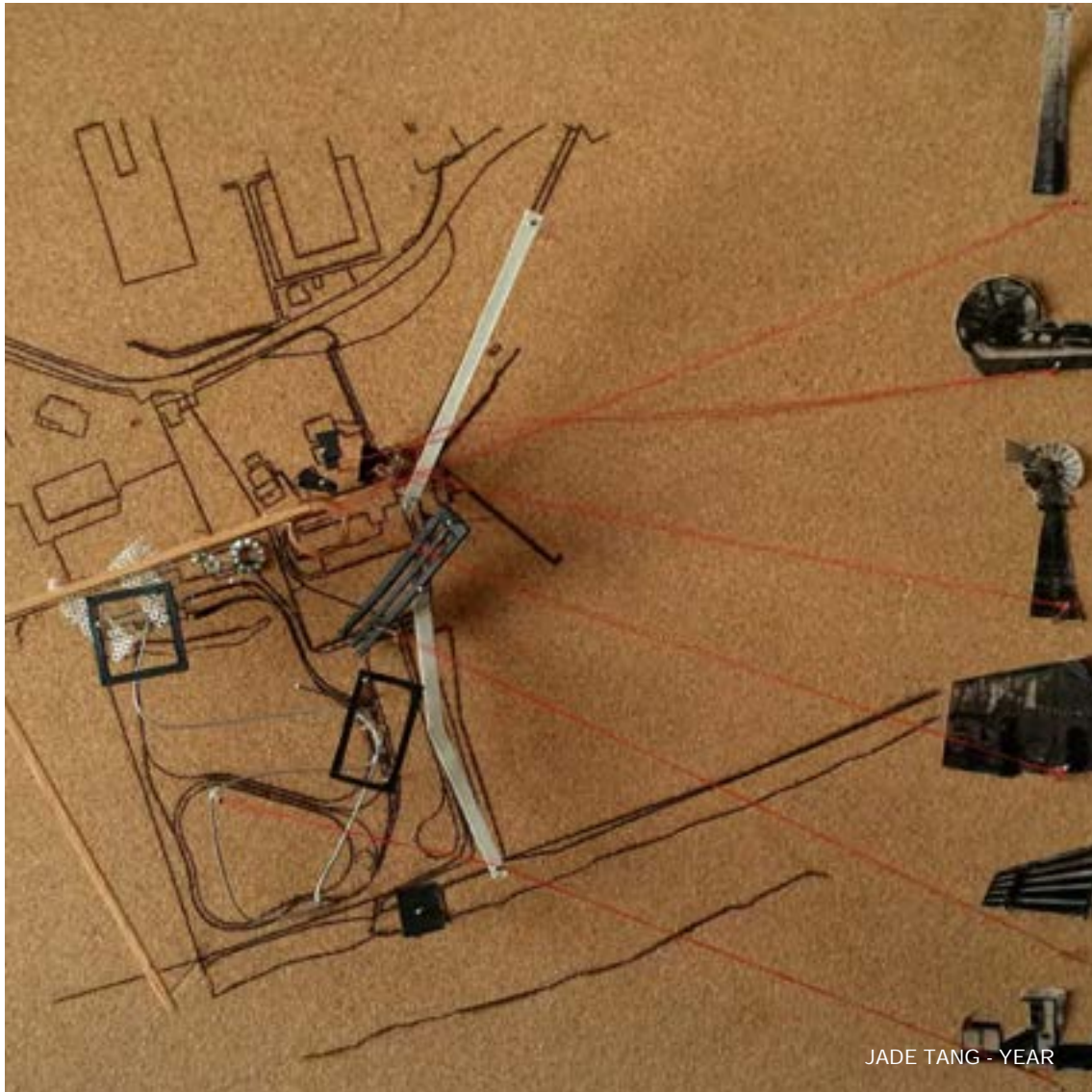


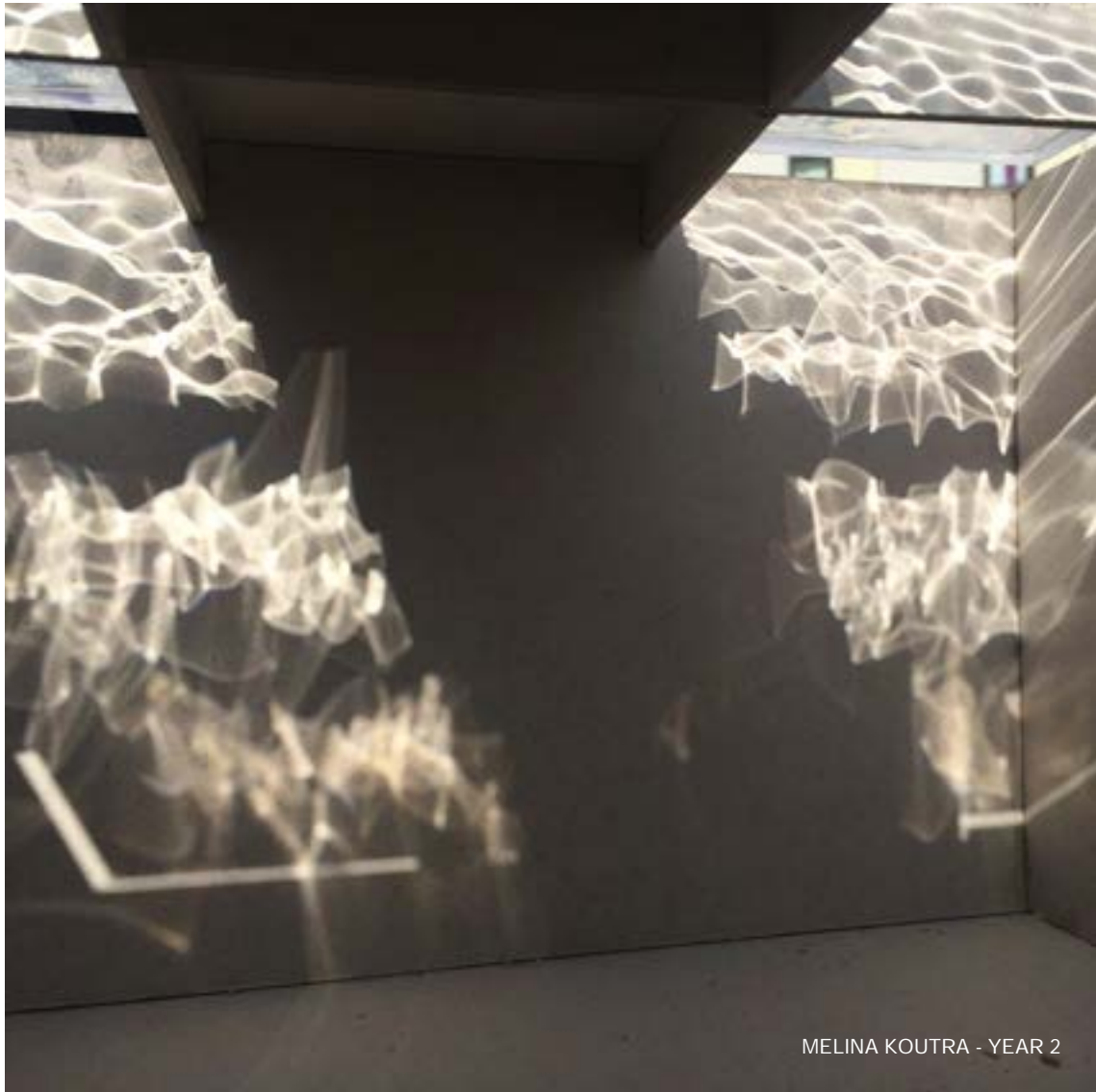
JADE TANG - YEAR



ARRAN THOMAS - YEAR 2









OLA URBANSKA - YEAR 2



REISHIN WATABE - YEAR





ALESSANDRO CARLUCCI - YEAR 2







REISHIN WATABE - YEAR

PRESENTATION

AN INTRODUCTION TO VISUAL PRESENTATION

AIMS & OBJECTIVES

This guide is a short introduction and advice for presenting visual material. This resource will greatly *help admissions* into Architecture schools requiring portfolios.

It will not only help design based subjects but also with all students participating the *Global Choices Conference* with media.

PLANNING

Planning your presentation before hand can help you coordinate your work better.

Think of your work as a physical collage, a scrapbook of sorts. Aim for a neat, relatively simple, and most of all a professional look.

Things like high-end magazines, newspapers, cooking books, photography books and websites are all acceptable forms of inspiration.

Be inspired by what you think suits your style of work.

EXAMPLES

The following are examples of layouts and presentation styles with accompanying comments.

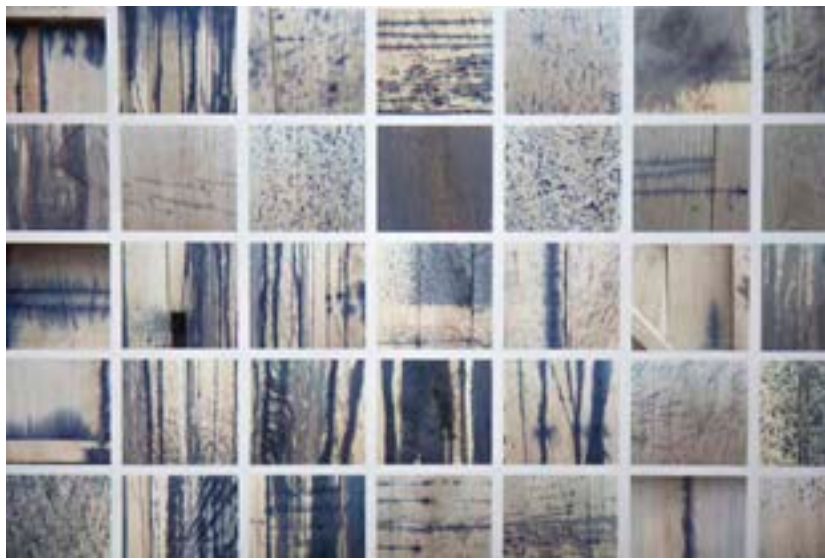
Please note that this is for guidance and are not 'the answers'.



Mudessar Ali, Year 3

Part of an architectural pin up presentation. Drawings arranged neatly, with a consistent graphical style. Image renders are of similar tonal style and lined together while the sectional drawings at the bottom have their ground planes at the same level.

Reading the pin up as a whole, one can understand the feeling of both the students ambitions and the atmosphere of the place they are proposing.



Chloe Sheward, Year 5

A collection of material studies, this arrangement is neat and well organised.

The photographs have a similar consistency of colour and together they successfully convey the strong tactile nature of the timber.



Year 1

An enticing hand drawing on white paper. The choice of ink on the relatively glossy paper effectively accentuates the contrast of the piece, making the lines clearer to see.

The presentation style of bull dog clips is simple and pleasing.



Dominika Wolfova, Year 3

A set of visualisations based on a 3D model. Light is cast well on the model, and combined with the black background it serves to make the feeling of the space more real. Addition of people in the images makes the space more understandable.

Photographs are taken well, though the grain of the wood is perhaps lost in the quality of the camera. Printing is not as good as the images are sadly.

Images also arranged well on page, but perhaps more care could be taken to align them straight.



Josh Lewis, Year 3

Elegant arranged with a good mixture of content (i.e map, conceptual studies, 3D renders).

All content is presented in a pleasing and similar tone, while the matching paper type also looks professional.

Models below are also arranged to line up with the drawings above, and their minimal use of materials and similarity matches the overall theme of the presentation.



Paolo Delogu

Work is arranged well, with key drawings framed in a black border.

Drawings are pleasing and the white is used to breakup the otherwise image dense presentation.

The centre of the pin up is carefully put together to have the most important drawings, and everything else is seems to be in chronological order of the design process. Thus this presentation layout is clear and makes it easy to read the content of the project.

Created by Students at The Welsh School of Architecture

Mohammed Awadella
Caitlin Mullard
Harry Marshall
Reishin Watabe

All images used in this pack were taken by students from The
Welsh School of Architecture.