Exploring **Materiality**: Advancing tectonic understanding through large-scale reproduction in two and three dimensions.

Clare Davidson

Clare.Davidson@uwe.ac.uk

UWE Bristol | University of the West of England

INTRODUCTION

DESIGN STUDIO 1

U B L L Y C - 6 0 - 1

BSc ARCHITECTURE (A)

BA ARCHITECTURE AND PLANNING (AP)

BEng ARCHITECTURE AND ENVIRONMENTAL ENGINEERING (AEE)

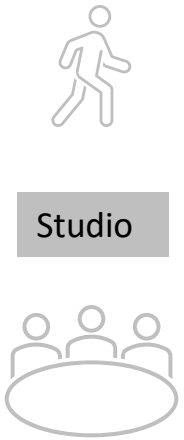
BSc ARCHITECTURAL TECHNOLOGY AND DESIGN (ATD)

BA INTERIOR ARCHITECTURE (IA)

250-300 students

DESIGN STUDIO 1

Exercise A: Orthographic Projection
Exercise B: Model-making
Exercise C: (Day)light and sha(dow)e
Exercise D: Anthropometrics
Exercise E: Visual Exploration
Exercise F: Reading Buildings
Exercise G: Axonometric Projection
Exercise H: Detailing (Axonometric)
Exercise i: Site Analysis
Exercise J: Diagramming
Exercise K: Mapping Context
Exercise L: Construction Strategy
Exercise M: Stairs & Regulations
Exercise N: [Photo] Montage
Exercise O: Peer Critical Review
Exercise P: Drawing Matter
Exercise Q: Composition
Exercise R: Re(presentation)
Exercise S: Ethics

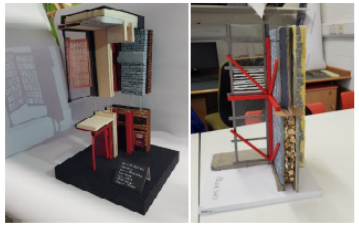


Project 1: Space
Project 2: Materiality
Project 3: Programme
Project 4: Experience

PROJECT 2: THE BRIEF

PROJECT 2: MATERIALITY

DETAIL + MATERIAL ASSEMBLY



Visit a building in Bristol, take a small area of the building and find out EVERYTHING you can about the materials and how they are assembled.

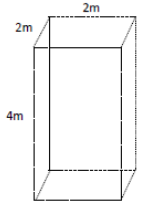
INTRODUCTION

The first project introduced you to one way of thinking about architecture. It explored the physical movement of people through space and introduced ideas of thresholds and transition through different spatial conditions.

In this next project, you are tasked with studying the 'materiality' of an assigned building. You are encouraged to investigate a range of materials, looking into why we use them and how they are put together or '*assembled*'. You should try to understand methods of construction, by attempting to analyse a building's structural system. This will be your first group project and will require co-ordination, goodwill, and excellent time management.

In small groups you will be producing a large-scale, hand-drawn architectural detail and a detailed model that represent the materials and technologies you have studied in your given building. You will also be asked to complete one individual drawing.

On **Thursday 16th November** everyone will attend a site visit to an assigned building with their tutor. This will be the only opportunity you will have to get inside the building and study its construction with your group and your tutor.



On site you will choose (and agree with your tutor), a study area measuring **2m x 2m x 4m (high).** You will be drawing and modelling this study area for this project; therefore, you will need to study it in fine detail whilst on site, looking at the materials, technologies, and methods of construction.
You will study and record information about the building, through drawing, measuring, photographing, and even videoing your study area. Gather all the information required – how much is enough? The more you draw, the more you will begin to understand what you need.

You will need to find a means of sharing this information amongst your group and must agree an appropriate method of communication. We would recommend Microsoft Teams, where you can communicate as well as safely store your information.

DELIVERABLES FOR PROJECT 2:

Groupwork (4-6 students):

1. A **1:2 scale section through your study area.** This drawing should be an orthographic section through your chosen area. This drawing, which will be up to 2m in length, is not intended as a final, polished drawing but more as a working drawing that is developed and worked on throughout the project. The drawing should be annotated, with key dimensions provided using suitable drawing conventions.

   On the same sheet you should include material research and process drawings such as, sketches, doodles, and notes. It is expected that lines will be rubbed out, drawn over and rubbed out again, so draw very faintly and do not spend a lot of time colouring in or shading - certainly not before the detail is finalized. The paper for this drawing will be provided.

   N.B.
   Your large drawings must be rolled up and stored on the blue cages in R block when you are not working on them. Please take great care not to smudge or crease the work and take greater care of the work of others. Before rolling your drawing, you might use drafting tape to secure a piece of tracing paper over any part of the drawing likely to smudge – only tape the 'leading edge' to avoid creases. Ensure your names and group number are on the exterior of the rolls!
   These large drawings will be photographed when completed, so please take care of them.

2. A **1:10 model of the 2m x 2m x 4m study area**. You are encouraged to consider the creative use of materials for use in your models. You should consider materials which have a similar quality, texture, flexibility, finish, reflectance, for example. Materials used may include paper, card, foam board, wood, plaster of Paris … Other material suggestions should be discussed and agreed with your tutor. If you would like to use the workshop machinery to complete elements of your model, you must have completed your workshop induction and must organize this yourselves. Bear in mind you have limited time available and some materials can take a long time to dry!
   Gluing a picture of the material to a card model however, is NOT an acceptable modelling technique.

   NB: any use of plaster or similar must be done in the workshop area, and no material can be placed down drains or sinks.

Individual work:

3. A **structural schematic drawing using axonometric projection**. This should present the structural approach to a portion of the building local to your study area. For example, it might be an axonometric drawing of one or two structural bays that explain the structural system or it might be the overall structural approach.
   You should include annotations about key structural elements (taken from Nick Simpson's lecture) and should include **an indicative key plan,** locating your structural axonometric within the whole building.

   This drawing should be on A2/A3 cartridge paper and depending on your building and the extents of the structural area you are including, might be drawn at 1:20, 1:50 or 1:100 scale. All of this should be discussed and agreed with your tutor in your tutorials.

There will be an opportunity for each group to evaluate and feedback on the % contribution of each team member at the end of the project.

This project will follow the normal pattern of the module. There will be one full tutorial day per week with your tutor (Thursday). You WILL need to spend time outside of this working as a group and producing your deliverables.
It is VITAL that you discuss and develop your drawings and models with your team, as often as you can.

SESSION	EXPLORATION
16-Nov SITE VISIT	Each tutorial group to be on site *either* from 11:00-13:00 *or* 14:00-16:00 There will be no lecture on this day, so please arrive in plenty of time and make use of the rest of your day for research or organizing information.
BEFORE your first tutorial day (Thursday 23rd November): Set up your group folder, e.g., on Microsoft Teams. Scan and upload all the information you have gathered to your shared space.	
Thurs **23/NOVEMBER**	AM - Review the survey information you have for your building. Begin drafting your section detail on A3 paper, researching materials, and noting down what you do and do not know.
Agree as a group, who will be working on the different aspects of the shared work.	
	PM - Collect large paper sheet and begin drafting detail. Begin planning the model – discuss the appropriate materials. Agree a time where the group can meet before the next tutorial.
Thurs **30/NOVEMBER**	AM - Agree your chosen detail. Work on your 1:2 detail on the large-scale paper. Begin working on the 1:10 model.
	PM – Research and discuss the building's structural system. Discuss the size/scale/location of your structural axonometric.
Thurs **07/DECEMBER**	Aim to have the 1:2 drawing substantially complete this week. Work on your 1:10 models. Begin drawing your individual structural schematic.
Monday 11/DECEMBER	Photograph your large drawings (John Griffiths) and models **REVIEW** – of all original drawings and models

THE REVIEW.

You will be given a time and place to pin up your work
so that your individual drawings are adjacent to your
format and your presentation should be considered.
You should bring all previously completed collaborati
diagrams, sketches about the building, its construction
use and intentions of the design.

The assigned buildings and meeting times for each tutorial group are as follows:

	11-1pm	2-4pm
Bristol Old Vic Theatre	**Group 1**	**Group 2**
Eco Home Create Centre	**Group 3**	**Group 4**
Bower Ashton F Block	**Group 5**	**Group 6**
Broadmead Baptist Church	**Group 7**	**Group 8**
Clifton Cathedral	**Group 9**	**Group 10**
Suspension Bridge Visitor Centre.	**Group 11**	**Group 12**
The Engine Shed	**Group 13**	**Group 14**
Church of St. Bernadette	**Group 15**	

UWE Bristol | University of the West of England

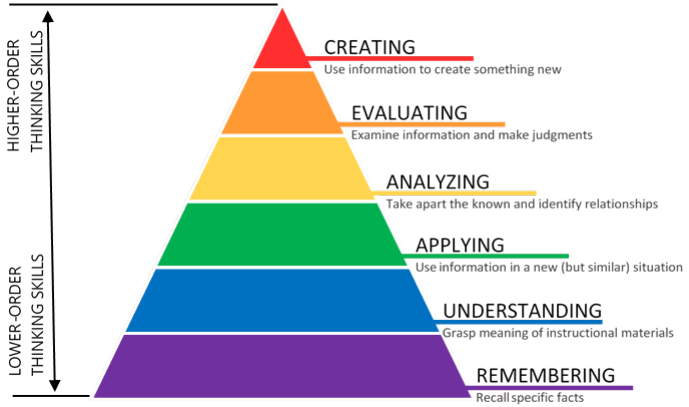
DESIGN STUDIO 1 uses…

‘DEEP LEARNING’
‘EXPERIENTIAL LEARNING’
‘LEARNING-BY-DOING’
‘ACTIVE LEARNING’

=

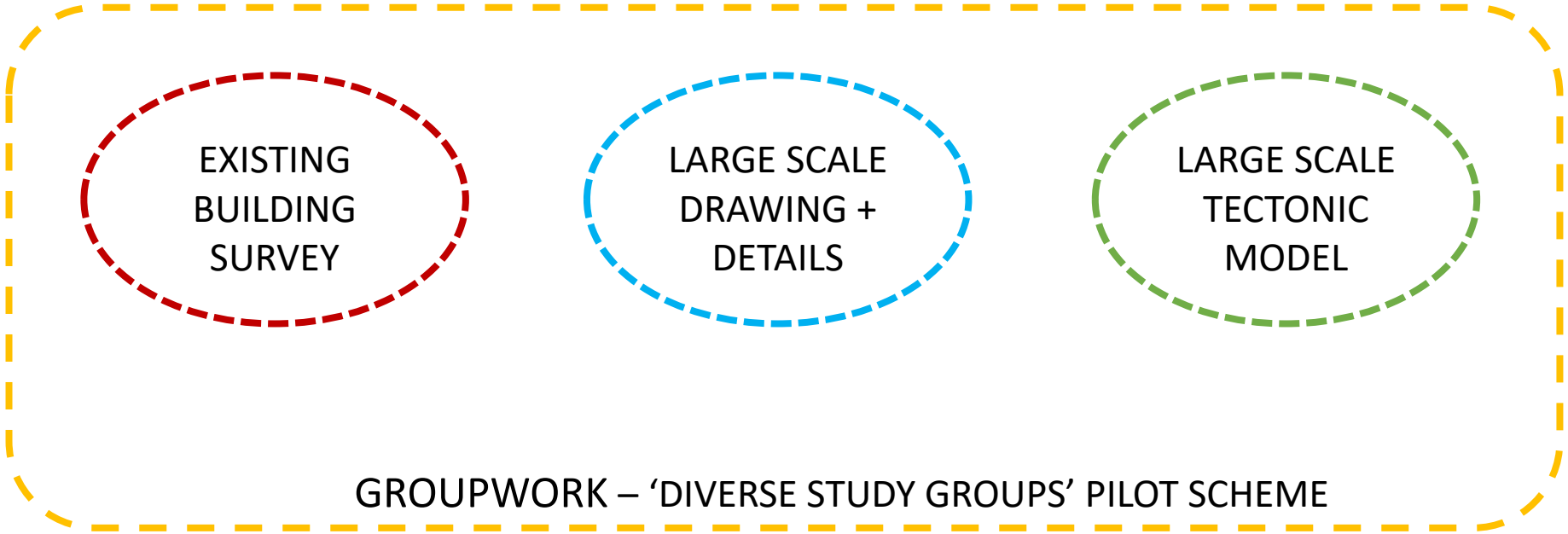
Requires higher order thinking skills

Better critical engagement
More creative in their discovery and synthesis
Reflective learning
Deeper analysis



Roberts, A., & Iyer, A. (2020) Engaging with the deep: Developing an understanding of deep and surface learning in design Studio Education. [Cardiff University] Kolb’s Cycle of Experiential learning.
Biggs and Tang – Structure of the Learning Outcome (SOLO) Taxonomy. Blooms Taxonomy of Learning. Dale’s Cone of Learning.

MATERIALITY:



MATERIALITY:

WHY DO WE THINK THIS PROJECT HAS BEEN SUCCESSFUL?

MEASURED BUILDING SURVEY

Long history of measured drawing - ancient building ruins – in the renaissance

Palladio devoted years to surveying ruins.

Helps students develop a rigorous procedure for organising, acquiring and recording measurements.

LARGE SCALE DRAWING + DETAILS

Referred to as an ‘autopsy’

Learning from the technologies and techniques of existing building construction

Understanding that lines have certain responsibilities to the constructed ‘object’

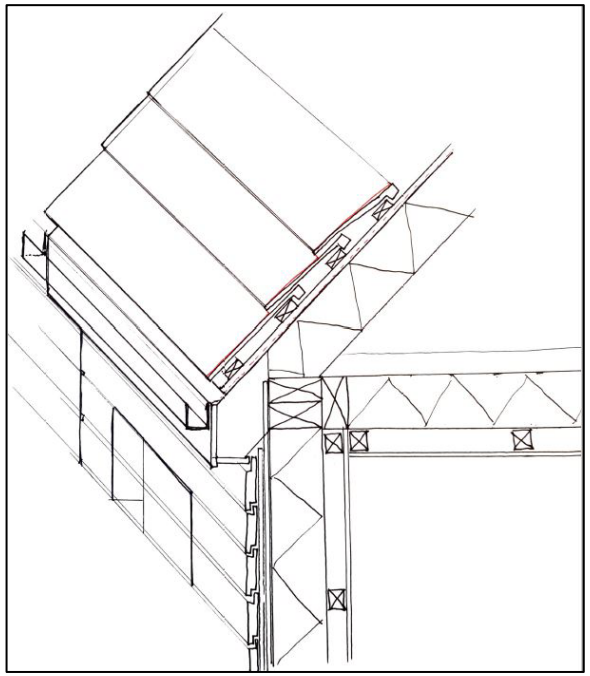
LARGE SCALE TECTONIC MODEL

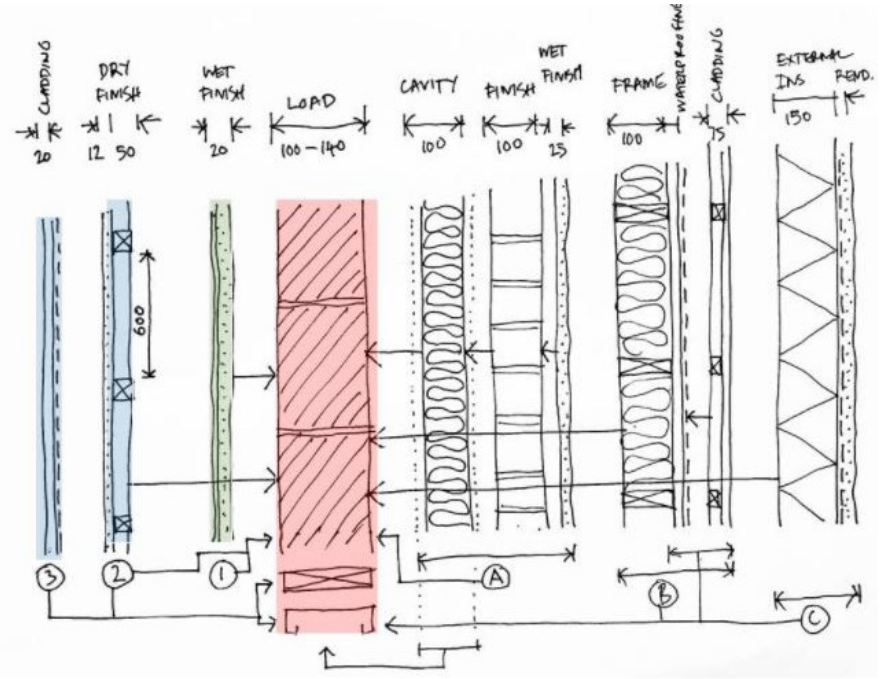
Helps facilitate students’ exploration of construction techniques, structural assembly, and material behaviour.

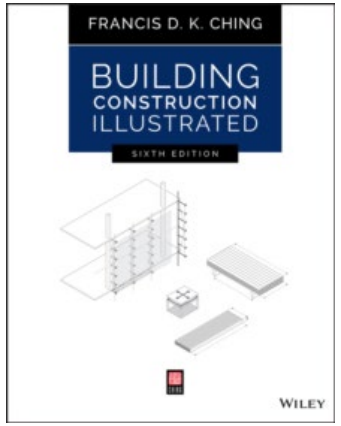
Emmons, P. & Davari, M. (2023) First Build Then Draw (and Repeat)! Circularity and measured drawings. [Virginia Polytechnic Institute and State University, US]

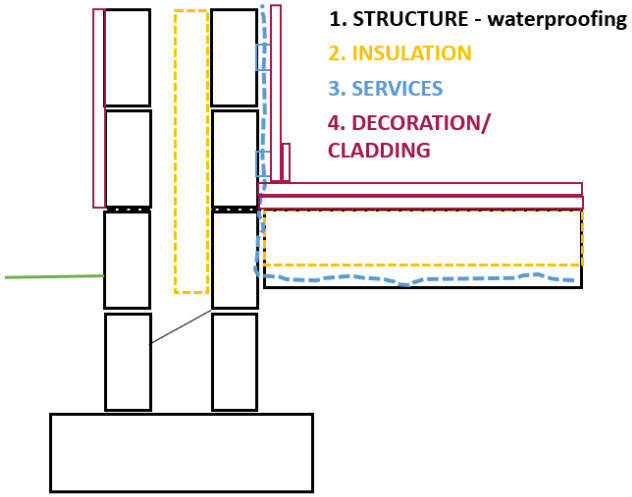
MATERIALITY:

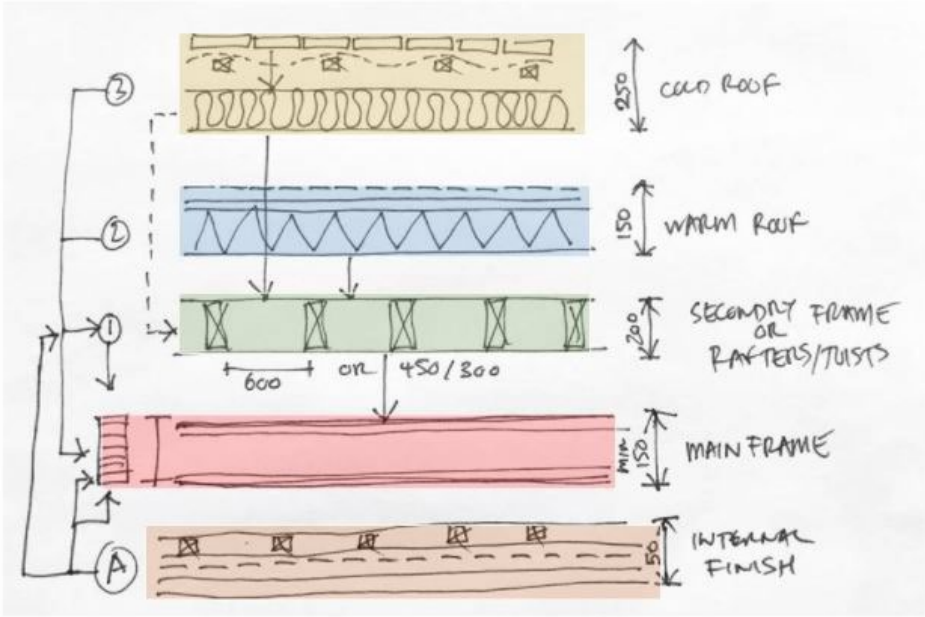
Exercise A: Orthographic Projection
Exercise B: Model-making
Exercise C: (Day)light and sha(dow)e
Exercise D: Anthropometrics
Exercise E: Visual Exploration
Exercise F: Reading Buildings
Exercise G: Axonometric Projection
Exercise H: Detailing (Axonometric)
Exercise i: Site Analysis
Exercise J: Diagramming
Exercise K: Mapping Context
Exercise L: Construction Strategy
Exercise M: Stairs & Regulations
Exercise N: [Photo] Montage
Exercise O: Peer Critical Review
Exercise P: Drawing Matter
Exercise Q: Composition
Exercise R: Re(presentation)
Exercise S: Ethics











UWE Bristol | University of the West of England

MATERIALITY:

National/international status, resitting students, Gender, Ethnicity, students from foundation year.

GROUPWORK – 'DIVERSE STUDY GROUPS' PILOT SCHEME

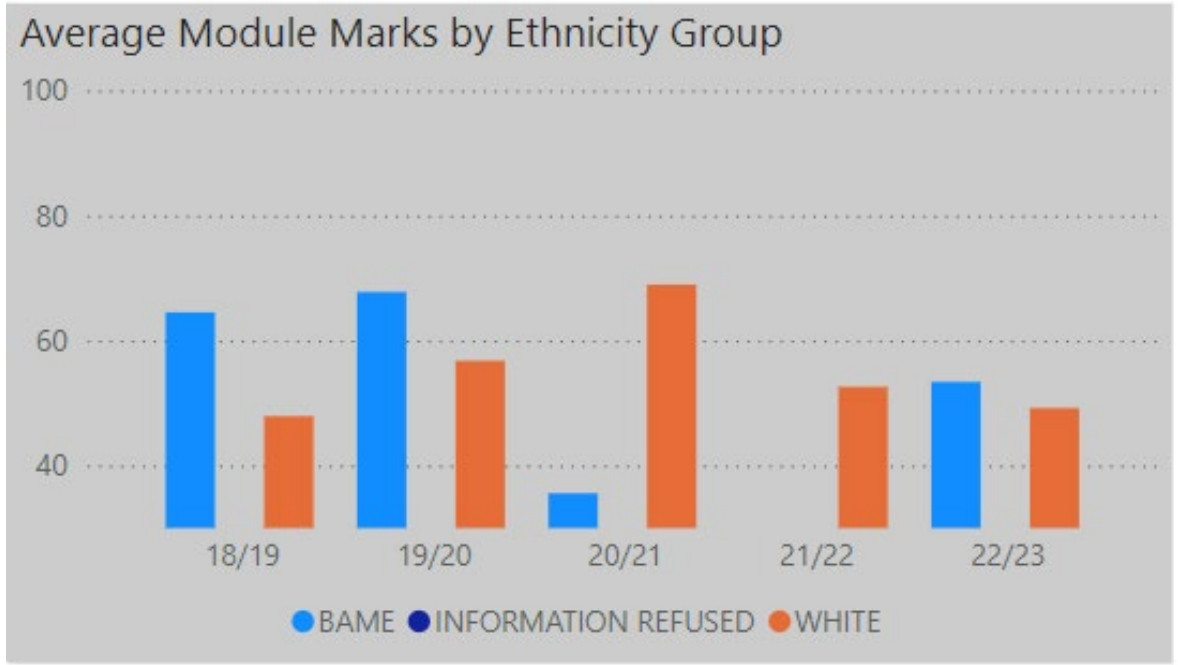
- Feedback from international and black students from 2022-23
- Student focus groups in previous years highlighted concerns around diversity and feelings of isolation
- Large awarding gap (36% across the university)
- Students feeling excluded

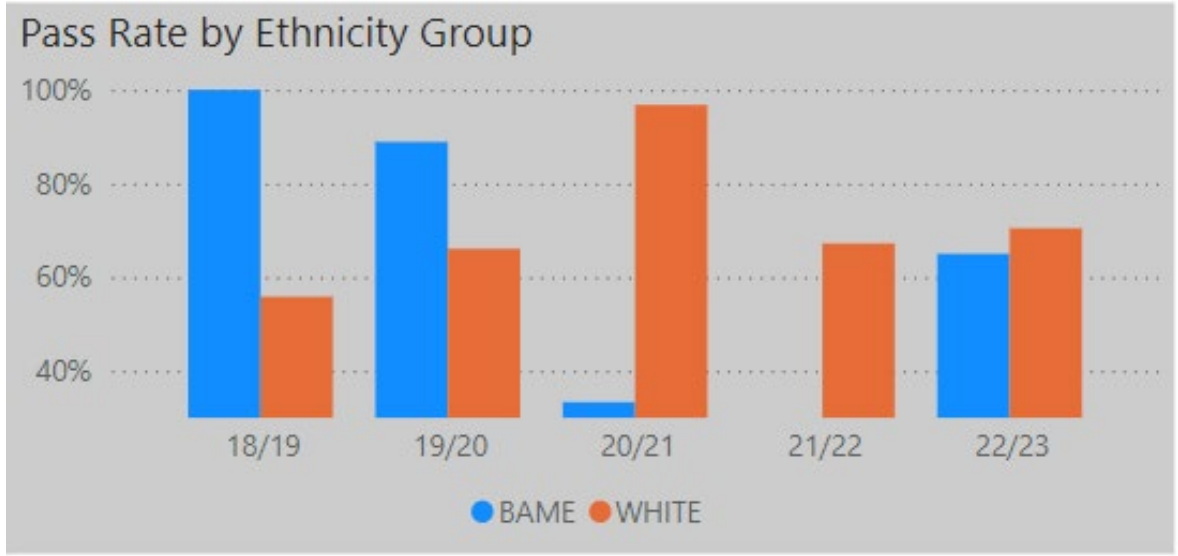
We wanted to:

- Encourage cultural collaboration
- Give students the most inclusive and welcoming start to their journey
- Prepare them for industry
- Improve cognitive and behavioural engagement, student attitudes and project outcomes

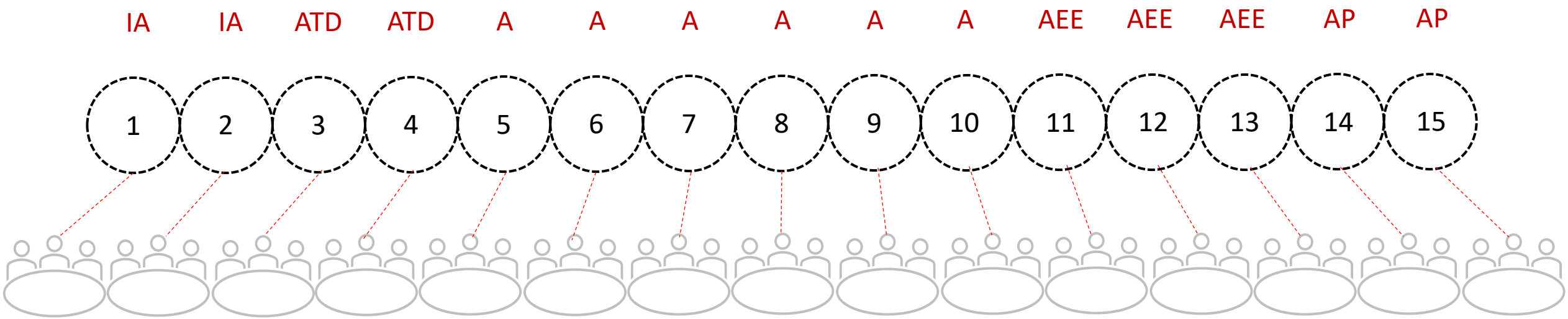
Smith. C., (2014) Fusing technology and design in the studio. [Liverpool John Moores University]

MODULE GAPS



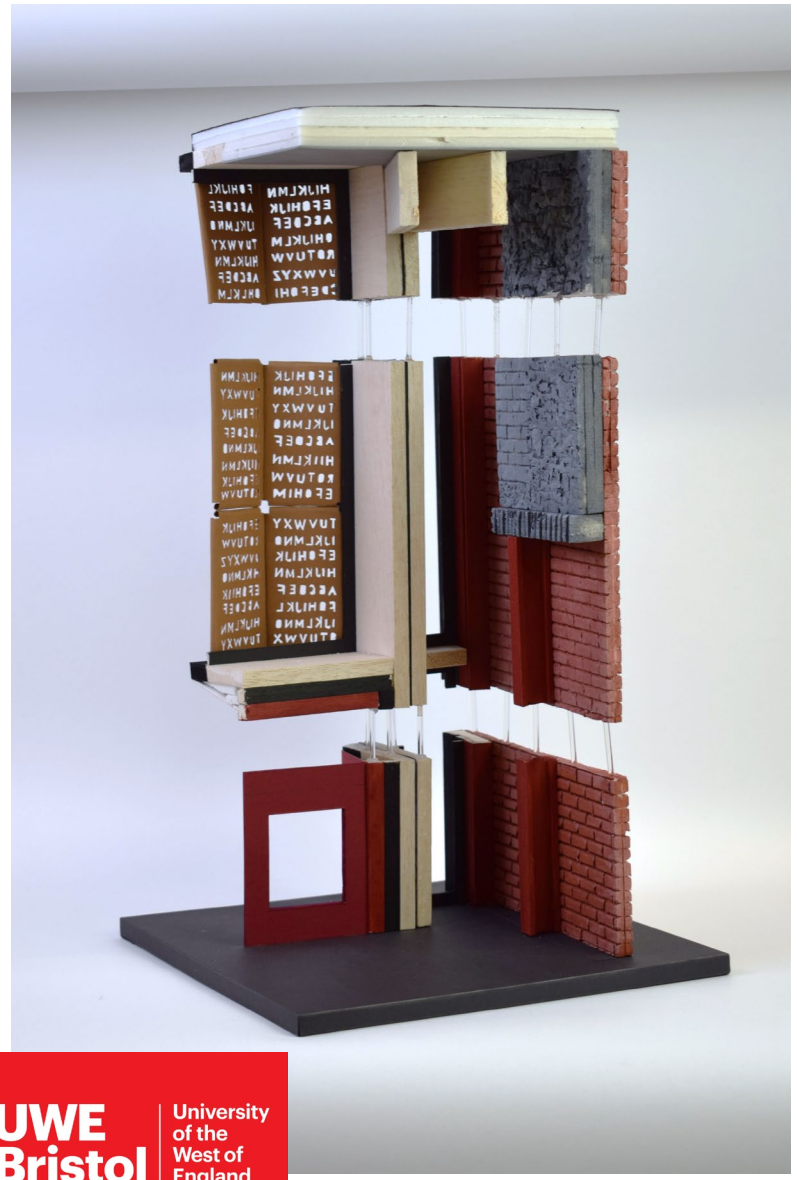


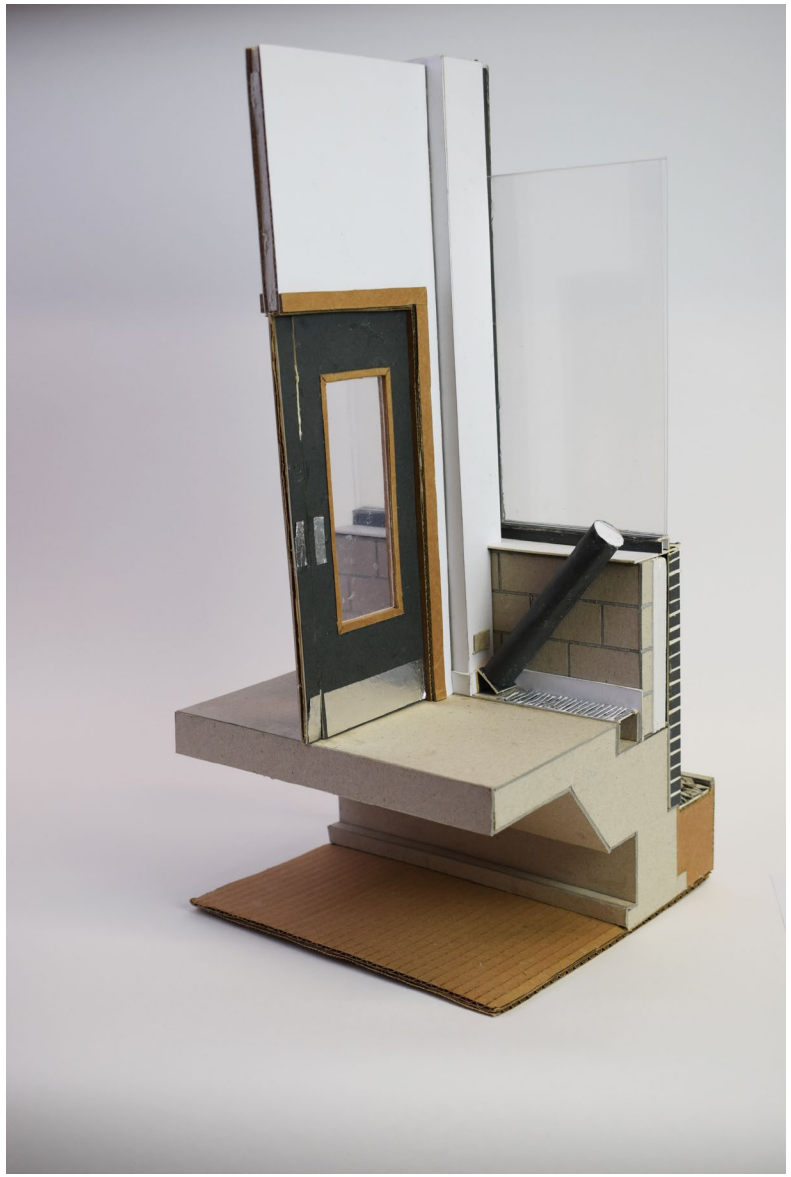
PROJECT 2: STUDY GROUPS



45 STUDY GROUPS (SUB-GROUPS)

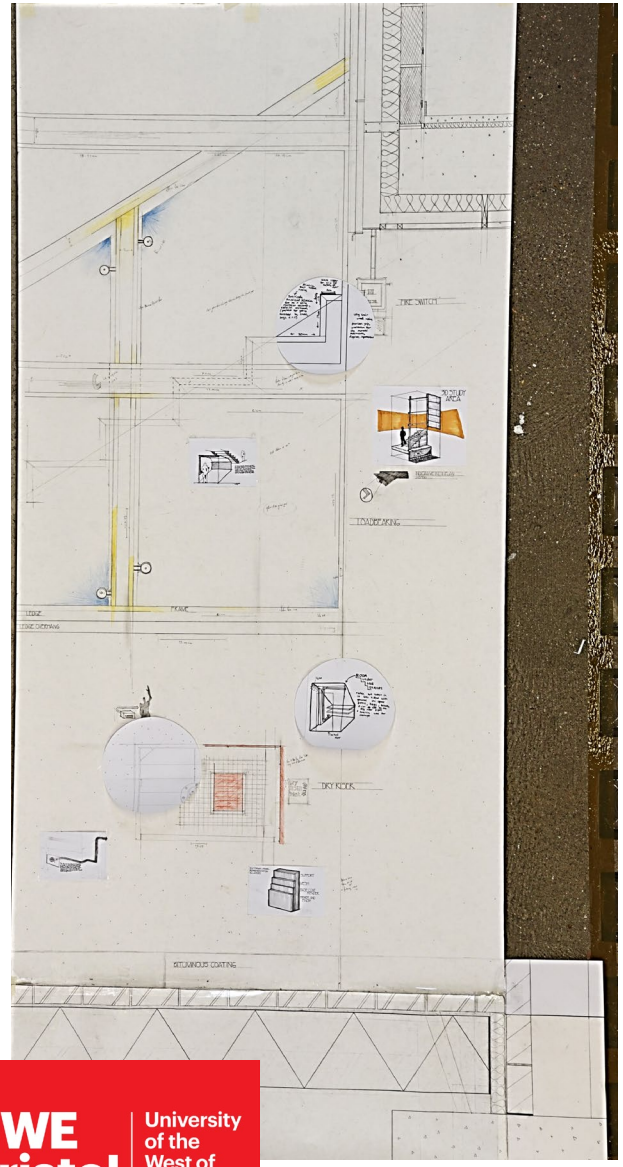
PROJECT 2: OUTPUTS

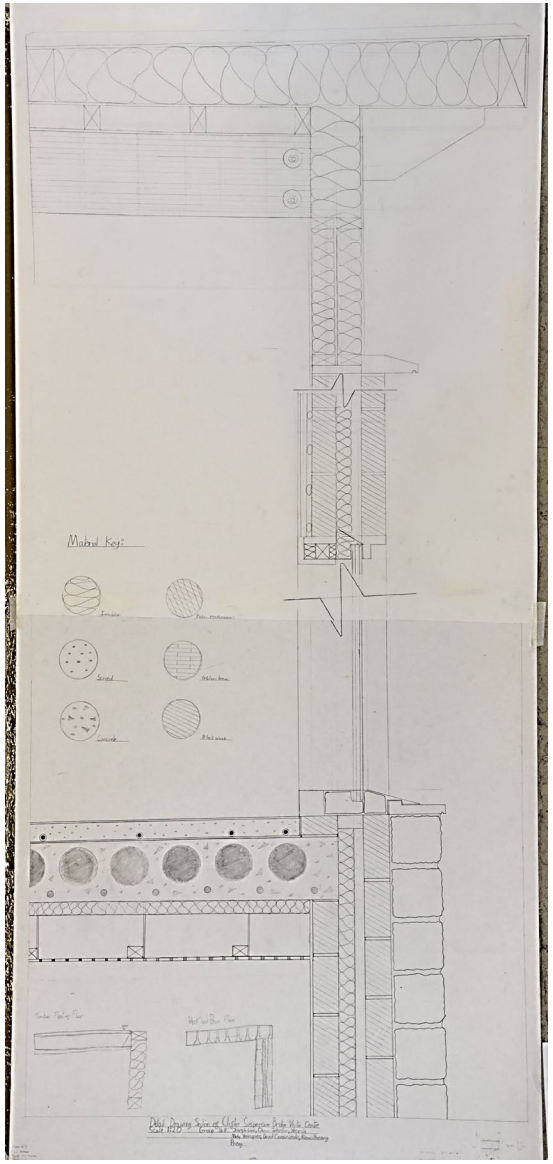


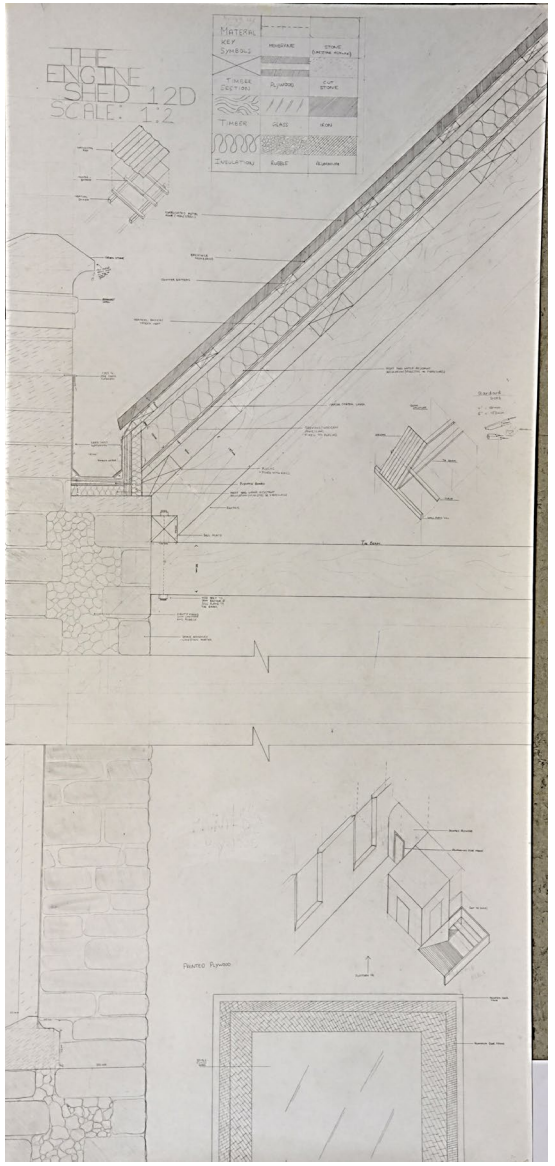


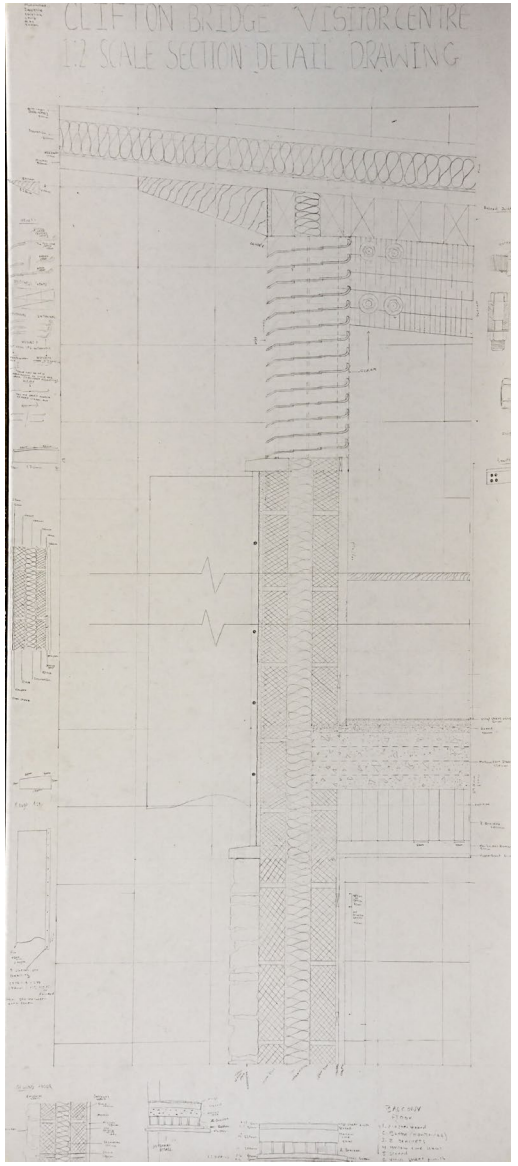
PROJECT 2: OUTPUTS

PROJECT 2: OUTPUTS









PROJECT 2: OUTCOMES

- Advanced their comprehension of tectonics and constructability
- Understood the value of crafting large scale models, especially in **testing structure** and assembly and in **material behaviour**
- Better understanding of the **sequence** of construction

- Study groups were communicated across first year modules
- Students continued working with study groups for P3 and P4
- Better studio culture than in previous years

- Some logistical and behavioural challenges, related to mis-communication, mis-aligned expectations

CONTINUOUS IMPROVEMENT….

- Tutor feedback
- Reviewing the data
- ‘Team’ rather than ‘group’ Positive language.
- ‘Inclusivity checklist’ ‘group norms’ or ‘group agreements’

University of Minnesota (2024) Three steps for inclusive and effective group agreements. [https://extension.umn.edu/community-news-and-insights/three-steps-inclusive-and-effective-group-agreements]

Thankyou

Clare Davidson

Clare.Davidson@uwe.ac.uk