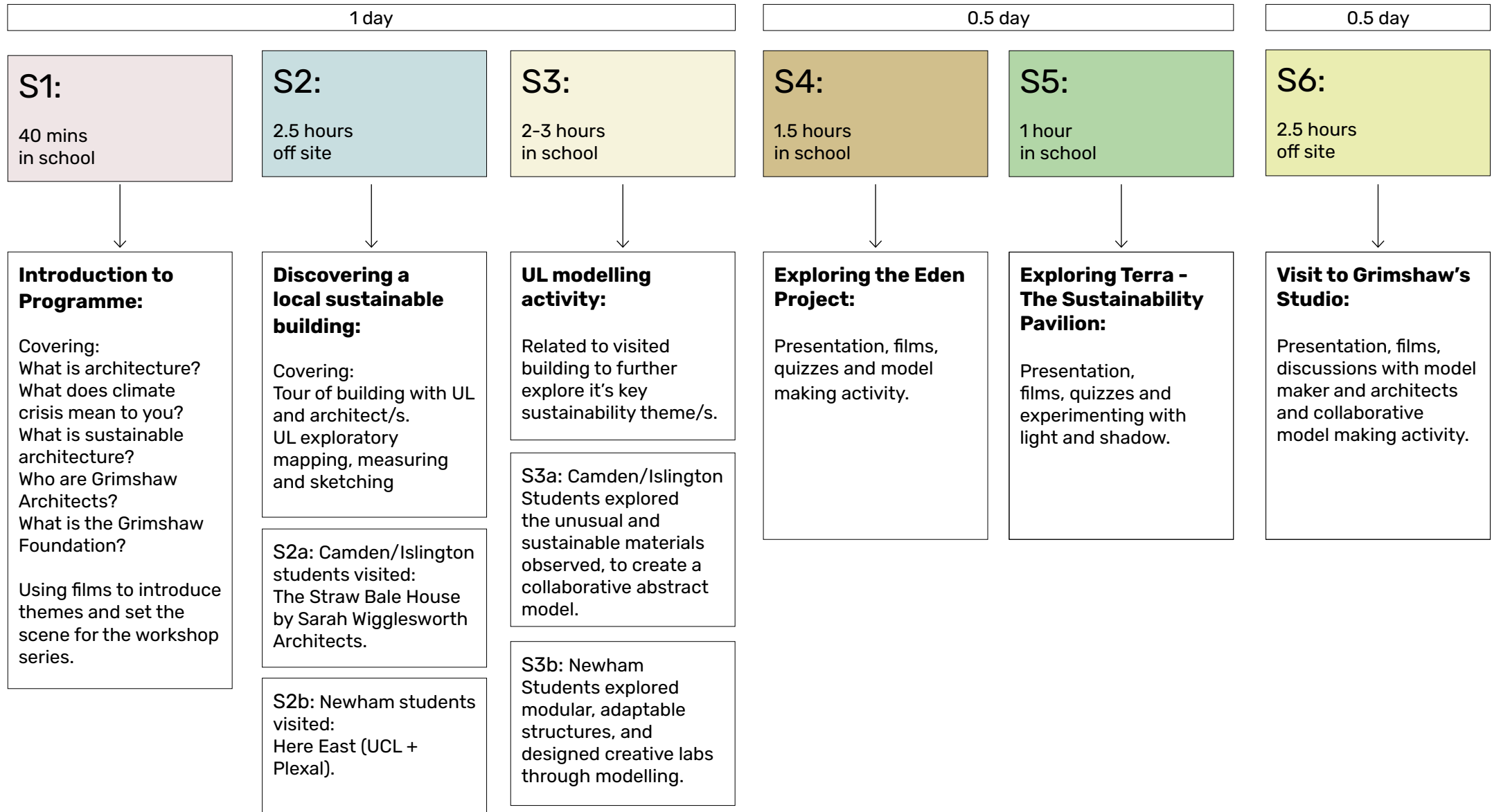


Architecture for Change: Building Sustainably

For KS3 students - designed + delivered for the Grimshaw Foundation by Urban Learners

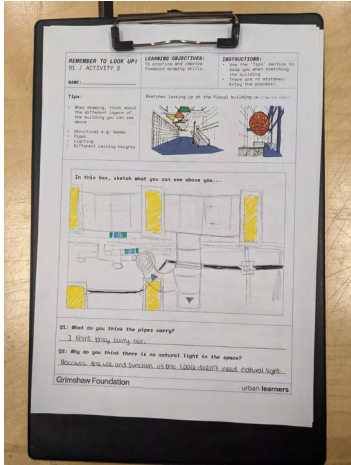
Programme Structure + Content:



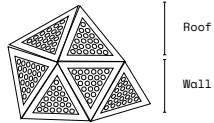
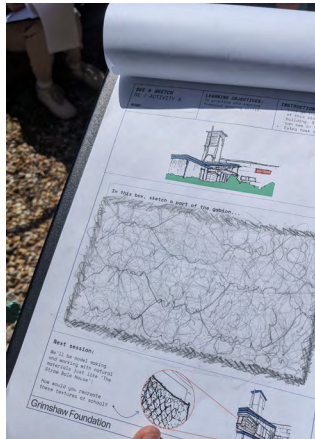
S1

Introduction to the Programme

Setting the scene for the workshop series and activities, all of which were accompanied by work sheets and/ or instruction sheets, e.g.



"All prepared resources were excellent." DT Teacher



STEP 5:

- Wrap the wall (step 4) around the base of the roof (step 5) to see how the parts connect.
- From the inside of the geodesic dome, glue the tabs together and clip together to keep them in place until they dry. Tip: place glue on the top tabs of Step 4 (wall) and then place the top (roof) on top and pinch them together from the inside. Paper clips can help keep the tabs in place too.
- You will probably need 2 pairs of hands to do this!

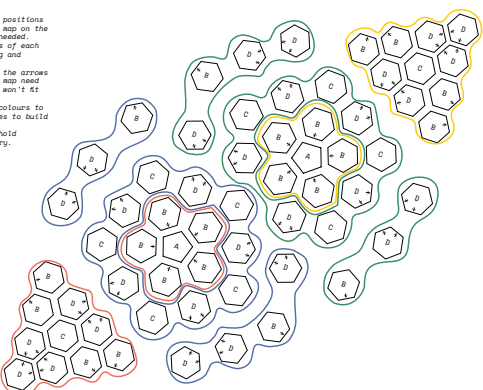
ASSEMBLING THE HEX DOME

(components) with straight edges can be joined to become curved forms to create a larger structure.

- Glue and paper clips

TOP TIPS:

- Place components in their correct positions before gluing! (Check the patterns map on the right) and use paper clips where needed.
- Put glue on the edges of each component, this stops glue running and getting messy!
- VERY IMPORTANT:** The direction of the arrows on the components and the patterns map need to match otherwise the components won't fit together correctly!
- Follow the patterns and match the colours to connect all of the component pieces to build the one big hex dome model!
- After gluing, use paper clips to hold component pieces in place until dry.
- This is a team effort!



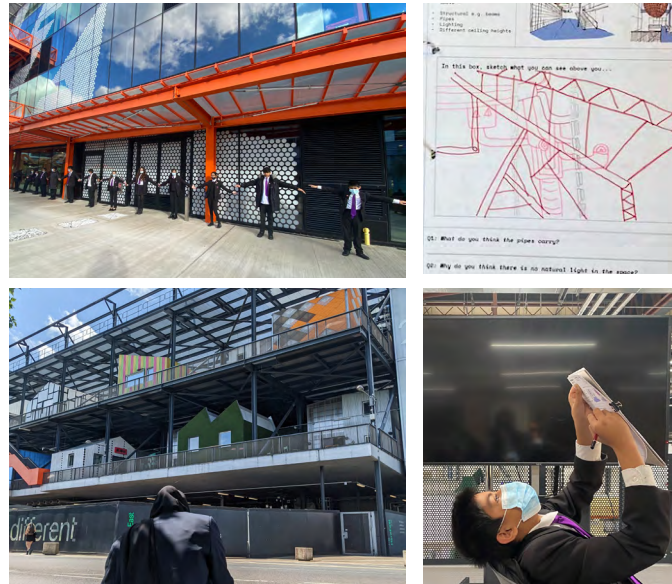
S2

Discovering a local sustainable building

S2a _ Camden/Islington schools visited The 'Straw Bale House'



S2b _ Newham schools visited Here East (UCL and Plexal)



S3

Modelling activity related to visited building

S3a

"The modelling in school in response to SWA exploration was really excellent, and all students worked well in teams to complete an overall outcome." DT Teacher



Curriculum links: Science, Art, Design Technology

S3b

"The students learnt how to scale down and the importance of ratio" DT Teacher



Curriculum links: Science, Geography, Design Technology

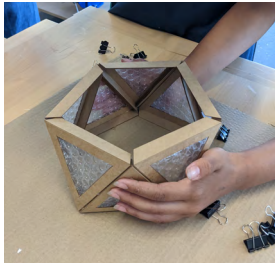
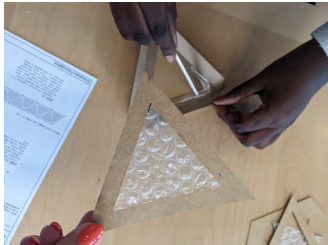
S4

Exploring The Eden Project, Cornwall



Showcasing the innovative efficient design and engineering of both the structure and materials students learnt about the biomes through films, quizzes and team model-making.

Using 2D triangles (we call them bubble wrap sandwiches) to create their own simple 3D geodesic domes further reinforced students understanding of why efficient structures create sustainable architecture.



Curriculum links: Maths, Science, Design Technology

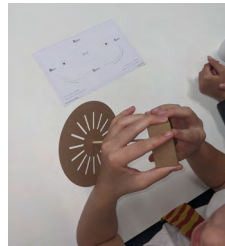
S5

Exploring Terra - The Sustainability Pavilion, Dubai



Showcasing the innovative design and engineering of both the Pavilion and surrounding Energy Trees, students learnt how nature and environment can influence sustainable and regenerative design through films and quizzes.

Experimenting with light and shadow was one of the ways the students' explored orientation and its impact sustainable architecture. Our simple models of the Terra Energy Trees helped them realise how innovative design features can track and move with the sun to create energy.



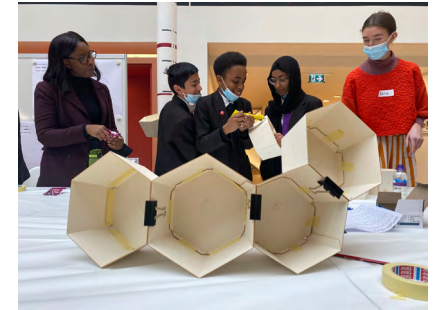
Curriculum links: Science, Geography, Design Technology

S6

Visiting Grimshaw's Studio



Working in teams and with architects to make hex components to then build a complex dome collaboratively in a studio environment. Students were introduced to the model workshop, and were also shown a variety of models (at different scales) around the office.



Curriculum links: Maths, Science, Design Technology

Key Learning Objectives

Through participating in the programme students should have:

- Developed their understanding and awareness of sustainable architecture and how this has a positive impact on the climate crisis.
- Developed an awareness and understanding of creative career pathways in the world of architecture, and the importance of GCSE art/design/technology to these.
- Learnt the following through quick model-making activities:
 - Key sustainability themes, e.g. efficient and modular structures.
 - Composition and/or design
 - How 2D shapes when connected in certain ways transform into a 3D object/structure.
 - Developed an understanding of scale and or proportion.
- Developed an understanding of how architecture has an impact on the people that use buildings.
- Developed their ability to record what they see, and to communicate ideas in 2D (quick sketching).
- Developed their ability to communicate ideas in 3D (quick model-making)
- Developed their team working skills.
- Developed their independent thinking.
- Developed their self confidence.

Student Feedback



"I learnt there are different jobs to do with architecture." 13 year old

"Architects focus a lot on sustainability even in small clever ways." 14 year old

"I loved it because we got to go into the structure that we made." 13 year old

"I liked how we had to organise the hexdome because it made me think." 14 year old

"I learnt there lots of different and special tasks are needed to make an idea." 13 year old



Student Participants

132 KS3 students
(aged 12-14 yrs)

92% attendance (of 144 total)

6 London state schools*

85%+ of all students from non-traditional backgrounds.

*School	% Eng not 1st Lang	% Pupil premium
COLA: Islington	36%	60%
Parliament Hill (Camden)	37%	38%
Regent High School (Camden)	78%	67%
Bobby Moore Academy	17%	51%
Harris Academy: Chobham	61%	43%
Stratford Academy School	73%	43%