

Introduction and Objectives

This Summer Half Term project aims to introduce a Year 9 Maths class from Norham High School in North Tyneside to a workplace setting where the subject they are studying is used in a wide variety of ways. The North East LEP are working with Norham HS and through their Enterprise Advisor Network have asked Tim Bailey, an architect with xsite architecture, to propose a project outline for a seven week engagement with Mrs Gill's Year 9 mathematics class.

The project is going to be based in the Ouseburn Valley, to the east of Newcastle city centre. It is a very diverse and interesting area where aspects of history, geography, culture and creativity are all in evidence. xsite architecture's office is in the valley and to demonstrate 'real world' applications in the built environment as series of tasks will be set that relate to design and the place but have a direct connection to the Learning Journey subject areas of Three Dimensional Shapes, Statistical Diagrams and Transformations.

The principle objective of the project is to connect classroom based learning at school with applied employment skills in a setting where there are also cross curricula references to be made by observation and generating interest and enthusiasm for the place.

Timetable

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
w/com	03 June	10 June	17 June	24 June	01 July	08 July	15 July
TB in lesson	05 June 10.50am	Visit to Ouseburn 10 June or 12 June	19 June 10.50am or Visit to Ouseburn	Nothing – exam week	04 July 1.10pm	10 July 10.50am	15 July 11.40am
Tasks based in classroom							
Visit to Ouseburn		Choice 1 Choice 2	Choice 3				
Celebration/ presentation							

Activity and Tasks

	Learning Journey		
	3 Dimensional Shapes	Statistical Diagrams	Transformations
Week 1	Introduction to Sketchup software if possible. This allows drawn shapes to be investigated by dimension, including how to 'see' and	Introduction to accurate and approximate data taking and using. Why accuracy is important because it translates into reality /	A description of architecture as a maths subject and then again as an arts subject. Relate the real world built

	calculate volumes(GM6.4, GM6.5 and GM6.8). Begin a design for Geometric Sculpture for the Ouseburn Valley (GM6.7)	aesthetics and durability (or sustainability).	environment to decisions made to ensure structural stability, heat and power work, etc.
Week 2	Visit to Ouseburn Valley, logistics to be resolved but Arch 6 will be the base for the day (assume visit to be approx.. 9.15am – 2.30pm allowing for travel times). Accompanying teaching staff/adults need to be confirmed. We could provide a simple lunch and drinks or packed lunch brought with the student.		
	Continue with Week 1 task. Choose a site, photograph it. Imagine its dimensions (too small, too big, just right)	In groups take series of data by written, photographic and audio record for use in later lesson. (i) In each quadrant count the number of windows and doors on show (ii) Put each building into one of the following categories; live, work, play (iii) Stand in one place (it doesn't matter where) for 10 minutes and record the number of; cars, cycles and people walking go by.	Demonstration of architectural software used for 2D and 3D design. Introduce why reflection (GM5.4) and rotation (GM5.5) are so important in what we do.
Week 3	Design using simple geometric shapes a goat house for the Ouseburn Farm. Work out exactly the area of surface material required to build it and how much of the ground will be covered by it when complete. Try to design so that the smallest area of ground is taken in ratio to the amount of surface area required.	Prepare some of the data to allow it to be interpreted and presented. Each group can decide how they use the data to tell the story of the Ouseburn.	An exercise using trigonometry (GM5.8) to measure and plan ramped access around the valley from given fixed points. Some information will be given, some will have to be derived.
Week 4	If any time emerges during this exam week then there should be work to continue from previous weeks.		
Week 5	Continue with Week 3 task.	Use various techniques to display analysis of data. Pie charts, scatter diagrams and histograms. (SP2.4, SP2.6 and SP2.8)	Use reflection, rotation and scaling to show how a cluster of goat houses could be made.

Week 6	An opportunity to finish off aspects of tasks remaining, prepare some of the presentation material and discuss with class members how the celebration is going to work.
Week 7	Celebration / Presentations at Norham High School
	The class should decide how they would like to present their work, in small groups or as individuals. The presentation should explain not just about what has been learned but its application as witnessed and perhaps as imagined in a future scenario. The presentation should be visually stimulating and ideally attractive, perhaps by using infographics techniques as well as traditional forms to display the data collected.

Ouseburn Quadrant

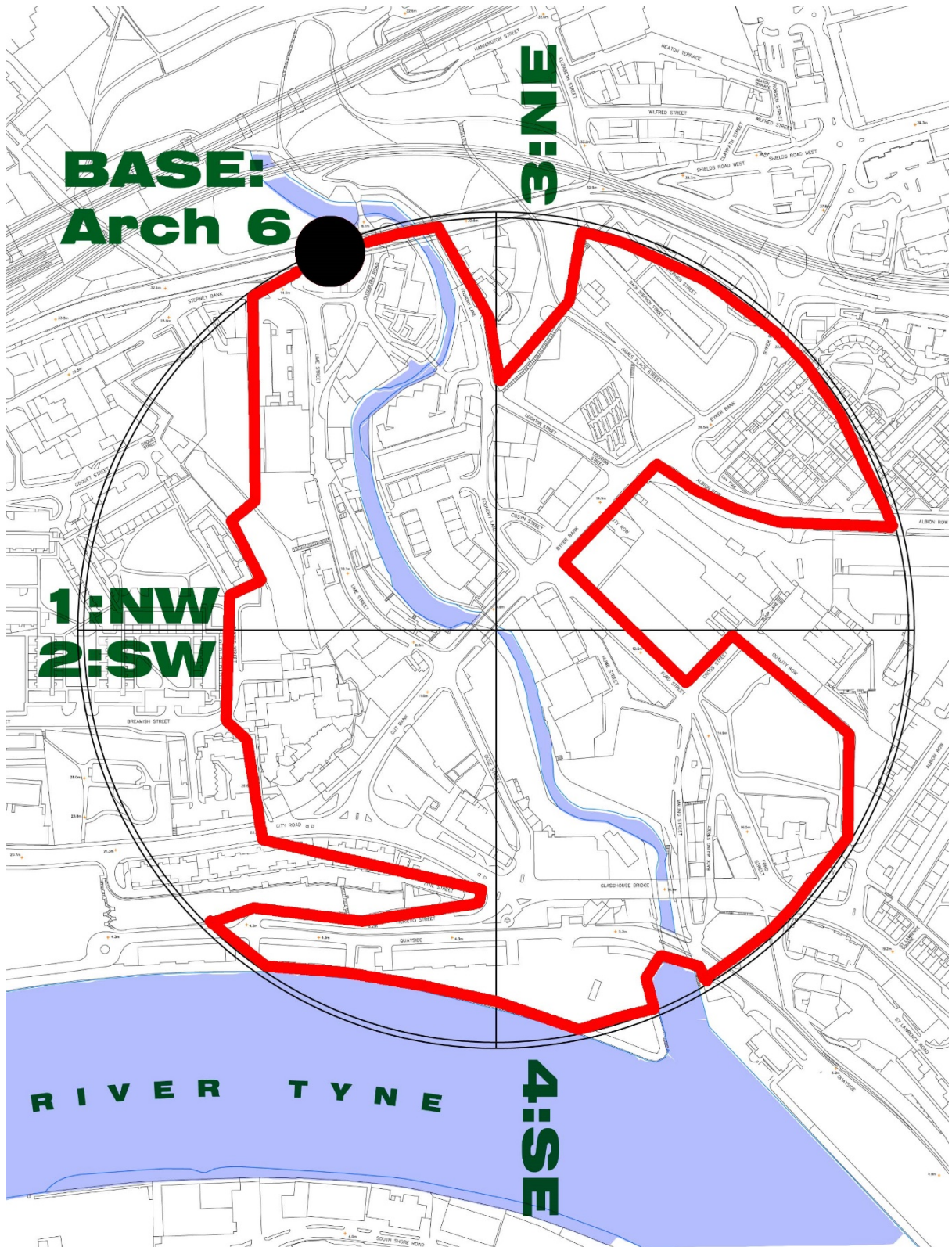
The Ouseburn is an important part of the industrial and social history of Newcastle. Originally outside the Town walls there were warehouses, factories and small scale industrial sites throughout the valley, which was constantly modified by shaping the land, controlling the tidal water and creating higher vehicular connections for Byker and Newcastle on either side. Hadrian's Wall runs through it, a tunnel for transporting coal to the Quayside in the 19th century became an air raid shelter in the 20th.

For the purposes of this project the valley has had four quadrants dropped over it. The centre of the circle described is the Byker Bank Bridge in the 'middle' of the valley and the radius is the distance from there to xsite's office at Arch 6 on Stepney Bank. Inside the circle a red line describes the area of the valley that is easy to navigate and all the questions and tasks relate to the area inside the red line.

The four quadrants are **1:NW** (North West), **2:SW** (South West), **3:NE** (North East) and **4:SE** (South East). These areas will be used as locator and additional versions of the map may be necessary to write down notes on.

There are no general right and wrong answers in this exercise. The idea is to encourage accuracy and precision but to show that depending on the question at the outset of the exercise, its interpretation and the application of imagination the 'answer' can be different. In other words all the mathematics can be accurate when applied to a situation or a design in this instance but the design itself requires an additional ingredient to end up looking the way it does.

Ouseburn Quadrant Map



Notes and working out_1

