

Design & Build Your Own Observatory

A Scheme of Work for Key Stages 2 & 3



Look in, Look out... Explore contemporary art and architecture and unlock learning across the curriculum with The Observatory.

The Observatory offers students and teachers an engaging and inspirational way to learn about contemporary art and design in two very special locations. Whether through the study of the structure's unique design and engineering, learning about the local landscape, or exploring the work of practicing artists, The Observatory supports learning for students across the school age range in subject areas including: Art & Design, English, Geography and Science. The Observatory also supports the objectives of the Learning Outside the Classroom and Learning Through Landscapes programmes.

What is The Observatory?

The Observatory is a sculptural installation, an intervention, a space, a platform, a shelter, a look-out where a series of artists will take up residence in two special locations over the next year.

- *Winchester Science Centre/South Downs National Park – February to July 2015*
- *Lymington Keyhaven – July to December 2015*

The Observatory is an excellent example of how design responds to a multi-faceted brief and offers students the opportunity to explore contemporary architecture in their locality, first hand.

The Observatory's unique and beautiful design includes a studio space for the artists and a workshop that is totally accessible to the public. The design features the use of sustainable materials and a specially engineered rotating base, which allows The Observatory to capture 360 degree views, whilst also being light on the landscape.

The Observatory provides a unique opportunity for students to engage directly with contemporary artists, learn about their working practices and understand how they respond to the world around them.

Six artists will be resident in The Observatory over the next year. Working in a variety of mediums including: drawing, sculpture performance, printing, and animation, the artists will create site-specific work in response to the landscape and to their experience of working in The Observatory.

For more information about The Observatory, visit our website:

www.lookinlookout.org



Using this Scheme of Work

Design & Build Your Own Observatory is a scheme of work for pupils in Key Stage 2 and 3. The scheme explores the complete design and construction of The Observatory, from the design brief, to the materials, to the engineering and transport of the structures. The scheme of work supports the following learning objectives for pupils:

- To gain knowledge and understanding of how design responds to purpose, function and site.
- To use research and develop design criteria to inform their own designs.
- To investigate and analyse designs.
- To generate, develop, model and communicate design ideas.
- To select and use a range of materials, tools and techniques to design and build models.

Design & Build Your Own Observatory can be delivered in one half term as a Design Technology unit of work, or as a cross curricular project. The scheme of work is structured as five 1-hour lesson plans, with some of the lessons having the option to extend into a second hour-long session. Each lesson has accompanying resources to enhance the teaching and learning, including: specially designed Resource Sheets, web links to project related material, PowerPoint presentations, etc. Some of these resources can also be used as stand-alone lessons or activities.

Delivery of this scheme of work can be supported and enhanced by visits to The Observatory and/or workshops led by SPUD or the resident artists in school. For more information, please contact: **Kristina@spudgroup.org**

1.	Learning Objectives	Curriculum Links	Resources	Discussion	Activities	Plenary
	<p>To understand the purpose and function of The Observatory.</p> <p>Use research and develop design criteria to inform the design of an Observatory.</p>	DT – Design, Evaluate	<p>RESOURCE SHEET 1: Observatory Design Competition Brief. (RESOURCE SHEET 1a: Edited Version can be used with younger children)</p> <p>RESOURCE SHEET 2: Location Information</p> <p>Observatory Project Presentation (Power Point).</p> <p>RESOURCE SHEET 3: Design Criteria Planning Grid.</p> <p>FILM: Look In Look Out. Available on www.lookinlookout.org</p>	<p>Explain The Observatory project, its vision, purpose, etc. Share the Project Presentation/Look In Look Out film about how the project developed from the Exbury Egg. Focus on the project objectives. What is an Observatory? Share definition. Look at examples of Observatory-like structures to inspire pupils. Do not share the winning design with pupils at this stage.</p> <p>Explain the purpose of a design brief. Encourage pupils to think about how The Observatory project objectives would inform the design criteria for the project. Identify and look at the unique qualities and challenges of each site (Use RESOURCE SHEET 2: Location Information).</p> <p>Key Questions:</p> <ul style="list-style-type: none"> • Who is The Observatory for? • How will The Observatory impact upon the landscape? • How will each site impact on The Observatory? • What parts of the design criteria would be requirements, things to consider, ideal? 	<p>In small groups, ask pupils to set their own design criteria to meet the project objectives for The Observatory.</p> <p>Pupils can use RESOURCE SHEET 3: Design Criteria Planning Grid to help structure their thinking.</p>	<p>Ask groups to feedback on the design criteria they have set, giving reasons linked to the project objectives.</p> <p>Share the actual design criteria for The Observatory with pupils using RESOURCE SHEET 1. Explore the reasoning behind the design brief – how does the design brief link to the project objectives. What things did pupils miss out? What things do pupils think that the project missed out?</p> <p>How does the design criteria actually impact on the delivery of the project?</p> <p>Discuss issues around planning permission, health & safety for the artist, transporting the structure.</p>

2.	Learning Objectives	Curriculum Links	Resources	Discussion	Activities	Plenary
	<p>To understand the purpose and function of The Observatory.</p> <p>Investigate and analyse the shortlisted designs for The Observatory.</p> <p>Use research and develop design criteria to inform the design of an Observatory.</p>	DT – Design, Evaluate	<p>Shortlisted design boards for The Observatory.</p> <p>RESOURCE SHEET 4: Observatory Design Competition Score Sheet</p> <p>www.lookinlookout.org/#!/competition/c1n0f</p> <p>RESOURCE SHEET 5: Rationale for selecting the winning design for The Observatory.</p>	<p>Remind pupils about the design criteria for the Observatory. Explain that The Observatory project ran a design competition to find a winning design. Architects were invited to collaborate with an artist to design a structure based on the design brief.</p> <p>Introduce the 5 shortlisted designs. Model how to evaluate one of the shortlisted designs using RESOURCE SHEET 4: Observatory Design Competition Score Sheet.</p> <p>Pupils can develop their own scoring methodology based on the project objectives and design criteria as a whole group, or use RESOURCE SHEET 4: Observatory Design Competition Score Sheet.</p>	<p>In groups, ask pupils to explore the shortlisted designs for The Observatory and evaluate how it meets the design brief criteria.</p> <p>Pupils should score each design based on the criteria and chose their winning design.</p>	<p>Using the design criteria, each groups presents the case for their chosen winning design. They should explain why the ruled out the other designs.</p> <p>Show pupils the winning design and explain rationale for why it was chosen, using RESOURCE SHEET 5: Rationale for selecting the winning design for The Observatory. Also highlight the reasons the other designs were discounted.</p> <p>What do pupils think of the winning design? What will be the biggest challenges for this design – in terms of the artist, audiences, sites?</p>

3.	Learning Objectives	Curriculum Links	Resources	Discussion	Activities	Plenary
	<p>Use research and design criteria to inform the design of an Observatory.</p> <p>Generate, develop, model and communicate design ideas.</p> <p>Consider the selection of materials for function and aesthetic.</p>	DT – Design, Make	<p>RESOURCE SHEET 1/1a: Observatory Competition Design Brief</p> <p>Shortlisted design boards for The Observatory.</p> <p>www.lookinlookout.org/#!competition/c1n0f</p> <p>A2 card for concept boards. Magazines/ Internet – for pictures of buildings, interiors, etc.</p> <p>RESOURCE SHEET 4: Observatory Design Competition Score Sheet</p> <p>Computer drafting software – e.g. CAD, Sketch up.</p>	<p><i>This session would ideally be run over 2 lessons (3 hrs), to provide pupils with adequate time to develop and communicate their design concepts.</i></p> <p>Return to looking at the example design boards from the shortlisted entries for The Observatory. Remind pupils about function, aesthetic, audience, site in relation to the designs.</p> <p>Look at different ways of communicating designs – using pictures, annotated sketches, exploded diagrams, cross sections, etc. Look at the overall design of the boards, how ideas are presented in a concise way.</p> <p>Explain that pupils will be developing their own design concept boards for their Observatory. Pupils will need to include explanatory drawings, pictures from magazines or drawings that explain their design decisions. Pupils should consider aesthetic, function, site, audience, materials.</p>	<p>Pupils brainstorm their ideas for their Observatory, then develop sketches, source examples of materials, aesthetic, etc., that express their design concept.</p> <p>Once they have gathered all of their presentation materials, they will need to plan out and structure their board to tell the story of their design.</p> <p>Design boards would ideally be completed over two lessons:</p> <ol style="list-style-type: none"> 1) Sketching ideas for the Observatory, research. 2) Research and creating the design board. 	<p>Pupils present their finished design concept boards for their Observatories, as part of a class design competition.</p> <p>Pupils then evaluate the design concepts through a class design competition. (Use RESOURCE SHEET 4 or scoring methodology developed by students in the previous lesson.)</p> <p>Reveal the winning design and explore with pupils:</p> <ul style="list-style-type: none"> • Why it scored the highest against the criteria? • Where could the other designs have been improved? <p><i>All pupils should have the opportunity to address evaluation feedback through amendments to their designs.</i></p>

4.	Learning Objectives	Curriculum Links	Resources	Discussion	Activities	Plenary
	To select and use a range of materials, tools, equipment and techniques to build a model of an Observatory.	DT – Design, Make, Technical knowledge	<p>Modelling materials – e.g. card, foam board, polystyrene, balsa wood, straws, toilet rolls, cereal boxes, cotton wool, felt, cellophane, foil, lolly sticks, glue, tape, etc.</p> <p>RESOURCE SHEET 6&7: Materials, Engineering Design Challenges</p> <p>RESOURCE SHEET 8: Materials Evaluation Grid</p> <p>www.lookinlookout.org/#!/Metal-framework-underconstruction-at-UnitSpark/c18ba/417780EA-0F28-47D0-BF9A-CDB76E5A33C8</p>	<p>Look at the materials and engineering used for the Observatory, using RESOURCE SHEET 6 & 7. Why were the materials they chosen? How did the engineering solve issues around location and transportation. Consider aesthetic, sustainability, light on the landscape, etc. Explain that pupils will be making models of the structure they designed for The Observatory. They will need to evaluate and select the best materials and solutions for creating their model.</p> <p>Using a range of materials, model how to evaluate different materials through open questioning, ... Would paper be an adequate material to use for the main structure (Consider load bearing, other materials, fixing and fastening)? How could materials be strengthened (consider structural supports, the strength of different shapes, etc)? What material would be best to demonstrate glass (consider transparency, light)?</p>	<p>Pupils explore the range of materials and construction techniques available for their models, evaluating and selecting those that they will use. For each material selected, pupils complete the RESOURCE SHEET 8: Materials Evaluation Grid, explaining the reasons for their choice and how each material will be used in their model. Pupils can include materials that they want to bring from home.</p> <p>Pupils should write a plan for how they will make their Observatory model, planning out what they need to do and sharing the tasks. They should explain the tools and equipment they will need to cut, shape, join and finish their models.</p>	<p>Return to the shortlisted designs for the Observatory. Look at some of the unique materials and engineering that the designers chose and consider their choices. (e.g. charred timber, insulating wool, tarred rope, composting toilet, turning mechanism, bicycle to generate power, etc.)</p> <p>What are the considerations for using these materials/ techniques in relation to construction, cost, impact on the environment?</p>

5.	Learning Objectives	Curriculum Links	Resources	Discussion	Activities	Plenary
	To select and use a range of materials, tools, equipment and techniques to build a model of an Observatory.	DT – Make, Technical Knowledge	Modelling materials – e.g. card, foam board, polystyrene, balsa wood, straws, toilet rolls, cereal boxes, cotton wool, felt, cellophane, foil, lolly sticks, glue, tape, etc.	Explain that pupils will be constructing their models using the plans and materials developed in the previous lesson. Remind pupils about different cutting and fixing tools and techniques they can use. Also, that plans can be altered as the construction progresses, to accommodate an issues that arise.	<p>In groups, pupils construct their Observatory models using the materials and techniques outlined in their plans.</p> <p><i>Construction may take several lessons to complete depending on the complexity of the designs, techniques and materials used. It is recommended that pupils have a minimum of 3hrs to complete their models.</i></p>	<p>Discuss with pupils any challenges they faced whilst building their models. How did they overcome these challenges? Did any materials or techniques have to be altered in their plans?</p> <p>Explain that designs often encounter changes at the construction stage – sometimes design concepts create practical challenges that weren't fully considered, or materials cannot be sourced and different ones have to be found, or planners impose changes to designs and new solutions have to be found.</p> <p>Completed models could form an exhibition alongside design concept boards.</p>