The Sun Shade Project: 
Teachers’ notes

Introduction
The Sun Shade Project is a design and technology project for years 7 to 9. It consists of an interactive PowerPoint style presentation for whiteboard use, with accompanying teachers’ notes and worksheets.

With over 500 cases of skin cancer in Wales alone every year, The Sun Shade Project is designed to raise awareness of the risk of sun related skin cancer amongst young people. It explains the dangers of sun exposure and suggests one way to reduce the risk – by building a sun shade.

The Sun Shade Project leads students through the research, design and creation of detailed scale drawings for a new sun shade for your school grounds, or other local community location.

Feedback
Please let us know how you get on with the resource by using the contact link to email feedback. At Tenovus we are keen to build relationships with schools and investment in materials like this is an important use of our carefully managed budgets – so please tell us what you think!

Curriculum links
The Sun Shade Project supports the following programmes of study in the Key Stage 3 Design and Technology Curriculum:

• Students should be given opportunities to develop their own design briefs.
• Students should identify and use appropriate sources of information to help generate and develop their ideas.
• Students should be given opportunities to be creative and innovative in their thinking.
• Students should identify and apply knowledge and understanding about technological and sustainability issues.
• Students should explore, develop and communicate design ideas in a range of ways.

In addition, The KS3 PSE Health and Emotional Wellbeing theme states that ‘learners should be given opportunities to display a responsible attitude towards keeping the mind and body safe and healthy’. This theme underpins all learning in The Sun Shade Project.
Teaching preparation

The project is designed to take three to four 45 minute lessons, but please take longer if you like, or pick and mix with other design and technology work as you see fit.

Students may work alone or in small teams and their core tasks are:

- Initial research and conclusions.
- Creating the design brief, including materials, location and eco factors.
- Planning the sunshade, including test designs, sketches and finally scale drawings of plan and side views.

The presentation includes a set of speakers’ notes for teaching staff, please see page 4. You will need a computer, audio system and interactive whiteboard to gain full value from this resource.

Worksheets

Nine Worksheets are also included. The presentation notes prompt where a worksheet is provided for student practical work. Worksheets are available for download from the Teachers’ Centre.

Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmosphere</td>
<td>The atmosphere is a layer of gases surrounding the planet Earth that is retained by Earth’s gravity. The atmosphere protects life on Earth by absorbing ultraviolet solar radiation, warming the surface through heat retention and reducing temperature extremes between day and night. Most of the planets in our Solar System, and even some of the moons have atmospheres.</td>
</tr>
<tr>
<td>Clorophyl</td>
<td>The green pigment of plant materials which is responsible for the trapping of light energy for photosynthesis.</td>
</tr>
<tr>
<td>Equator</td>
<td>An imaginary great circle around the earth’s surface, equal distance from the poles and at right angles to the earth’s axis of rotation. It divides the earth into the Northern Hemisphere and the Southern Hemisphere.</td>
</tr>
<tr>
<td>Malignant Melanoma</td>
<td>The most dangerous form of skin cancer that will grow and spread to other organs.</td>
</tr>
<tr>
<td>Ozone layer</td>
<td>A layer of gas high up in the atmosphere that absorbs dangerous UV light and protects the Earth from its affects. The layer begins between 6 and 10 miles above the Earth’s surface and extends up to about 30 miles.</td>
</tr>
<tr>
<td><strong>Photosynthesis</strong></td>
<td>The process by which plants use energy from sunlight to make food.</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Skin cancer</strong></td>
<td>Cancer that forms in tissues of the skin.</td>
</tr>
<tr>
<td><strong>Solar system</strong></td>
<td>A solar system consists of a star and all the objects orbiting it. Our Solar System includes the Sun together with the eight planets and their moons as well as all other celestial bodies that orbit the sun.</td>
</tr>
<tr>
<td><strong>SPF</strong></td>
<td>Sun Protection Factor - a laboratory measure of the effectiveness of sun cream. The higher the number, the greater the level of protection.</td>
</tr>
<tr>
<td><strong>Sun burn</strong></td>
<td>Redness, soreness or blistering of the skin caused by over exposure to direct sunlight.</td>
</tr>
<tr>
<td><strong>UV light</strong></td>
<td>A form of light that can be dangerous to the skin and can’t be seen by human eyes.</td>
</tr>
<tr>
<td><strong>Vitamin D</strong></td>
<td>Vitamin D is a fat-soluble vitamin. The body makes vitamin D when the skin is exposed to sunlight. Vitamin D is required by the body to absorb and use calcium, which keeps bones and teeth strong.</td>
</tr>
</tbody>
</table>

**Fundraising**

Our work at Tenovus Cancer Care is vital in helping to prevent, treat and find a cure for cancer. We’d appreciate it if you and your class are able to build some fundraising activities into the work you are doing.

For other ideas on fundraising for Tenovus Cancer Care in your school or community please contact our fundraising team at fundraising@tenovuscancercare.org.uk.
The Sun Shad Project: Presentation notes

Slide 1: Introduction
This 2 minute video features Tenovus Cancer Care scientists explaining the importance of managing time in the sun safely. They cover:

- UV light
- Sunburn and melanoma
- The dangers of sunbeds
- The role of sun cream and shade in enjoying time in the sun safely

After watching the video encourage your class to talk about what they know about the sun and its dangers. Did anything in the video surprise them? Do they use sunbeds? Do they protect themselves when out in the sun?

Slide 2: Project Briefing
This 3½ minute video briefs students on their sun shade project. The class should now understand the importance of sun protection, and hence the benefit of the project.

The video explores both the practical and aesthetic benefits of sun shades and shows a range of styles, in-situ in schools and other community locations.

With the help of Steve Coombs, an Architect and Research Associate at Cardiff University’s Welsh School of Architecture, the video explains the design process, provides some inspiration and challenges the class to design their own.

Worksheet 1 is a Project Planner for students to use. It sets out the key stages of the project. Talk your students through the planner and agree with the class the dates by which each stage must be complete. Students can use the planner to keep their project on track, and tick off each stage as they complete.
Slide 3: Initial Thoughts

Ask your students to make a mood board of their initial thoughts on the project, to kick-start their thinking.

Use Worksheet 2 or hand out large sheets of A2 paper for students to make mood boards in small groups.

Students should look for a range of images that inform and inspire them. They might want to think about:

- Why a sun shade is important
- The location
- The target audience
- Shape, colour and material ideas

The mood board on screen is a good example. This task would make an ideal homework activity.

Slide 4: The Research Phase

Research is a key phase in any project.

Market research - the process of gathering, analysing and interpreting information about a market, product or service to be offered - ensures design is appropriate, fulfils a need and is user-friendly.

Using the prompts on screen, ask your class to design a simple questionnaire which will help them design a sun shade that their audience will want to use. Worksheet 3 is a questionnaire template. Worksheet 4 will help students to interpret and analyse their results.
Slide 5: Creating Your Design Brief
This stage asks students to turn their research results into a workable design brief.

Using Worksheet 5 they should write a simple design brief to set the parameters of their project.

Ask students to give particular consideration to ecological factors. How sustainable should the design be? How will the sun shade construction impact on the environment of their chosen location for example? And are there any eco-friendly materials they could use? You might like to use this as a springboard to exploring the eco-qualities of a range of possible construction materials.

Students could also explore high tech and ‘intelligent’ textiles such as those with in-built UV filters.

Slide 6: Planning the Sun Shade
This is the core of the project. Taking inspiration from the professional sketches on screen, students should now be ready to have a go at their own.

Worksheet 6 will help students to list their main design ideas, to help focus their practical design work. Worksheet 7 then asks for 2-3 rough design sketches. These can be hand drawn, black and white or coloured, but must use lots of imagination!

Referring back to their research and written design brief, students should then select the design which is most appropriate, and produce a final scale drawing.

Worksheet 8, on graph paper, will help students to produce two final images:
1. A plan view showing structure from above and the surrounding buildings, trees, fences etc (if any).
2. A side elevation showing height.

Slide 7: And you thought you’d finished...
This final slide features a video challenge from Tenovus Cancer Care. We hope Steve Coombs’ endorsement will help encourage your students to participate!