



FAULKES TELESCOPE



Las Cumbres Observatory Global Telescope

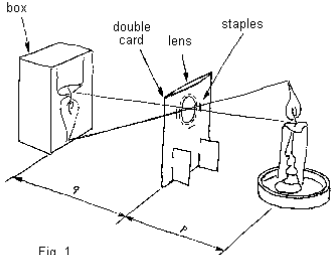
**Art and Science**

**Schemes of Work**

**Art and Science**

<p><b>YEAR 8 &amp; 9</b> Gifted and Talented</p>	<p><b>Project Theme:</b> O’Keeffe style Nebula gas clouds. Science and Art <b>Duration:</b> 15 weeks (15 lessons) (1 Hour lessons) Exhibit work outside of school environment</p>		<p><b>Area of Study: Science</b> - light, colour, use of a lens, telescope use, the Faulkes telescope colour-layering images taken through photoshop. <b>Art</b> - colour, form, painting techniques, stretching canvas, understanding the work of O’Keeffe and ICT</p>			<p><b>Pupil Nos:</b> 15-20</p>
Lesson No	Classroom activities and tasks	Homework Tasks	Differentiation	Key Learning Objectives	Assessment Opportunities	Resources
<p><b>1</b> Numeracy Literacy ICT PSHE</p>	<p>Intro project through power point. Outline overall aim of project merging science with art. Discuss the connections made with the work of O’Keeffe and nebula gas clouds. Encourage a discussion with the students and what they see. Students to start to research and collect images and information on the work of O’Keeffe and nebula images</p>	<p>Students need to collect a number of images on nebula clouds and O’Keeffe and also information about her style and techniques, as they will be producing at a later date a power point. Store collected resources to data stick.</p>	<p>Students will be initially painting and copying an O’Keeffe image. Differentiation takes place by the complexity and depth of the O’Keeffe images selected to work from, through shape or colour.</p>	<p>Establishing choices, working independently to make decisions in their selection of images and information collected. To learn to understand the work of O’Keeffe.</p>	<p>Question &amp; Answers/ discussion.  Review of work at the end of the lesson. Set targets on what each student wishes to achieve from the project.</p>	<p>ICT access.</p>
<p><b>2</b> Numeracy Literacy</p>	<p>Colour Theory. Students will have an understanding of basic colour theory. Science and Art teach colour theory slightly differently. In this session, it to recap and review and discuss the different aspects of colour and its different combinations. Access the different web sites listed below to explain.</p>	<p>Students from their research can produce a colour wheel of primary, secondary and tertiary shades. Create colour bars where they have tinted, toned and shaded colour. Basically learn through media to mix colour and to annotate findings.</p>	<p>Differentiate the use of media to suit each students needs and to develop their confidence when using paint. To discover through experimentation and to log how each colour has been mix with what combinations</p>	<p>To understand colour through science and art.  To develop an understanding of how colour is made up and why you use the colours you select.</p>	<p>Question &amp; Answer/ discussion  Review of work at end of lesson</p>	<p>ICT.  Sketchbooks, dry and wet media.  Compass, protractor.</p>

<p><b>3</b> Literacy ICT</p>	<p>From the images they have collected on O’Keeffe, they need to select one and extract an area. Enlarge area on to A3 card. Plan out section. Through their understanding of colour mixing they are to copy the O’Keeffe section.</p>	<p>To each produce in groups of 2/3 a power point slide of their understanding of the project, on what they have learnt so far, using collected resources</p>	<p>Those more confident with painting, will not plan out but to start and actually paint directly onto the card. They will actually mix the various required colours on the card, not the palette.</p>	<p>To put into context the work of O’Keeffe and colour mixing. How it all works together.</p>	<p>Question &amp; Answer/ discussion Review of work at end of lesson</p>	<p>ICT. Sketchbooks, Acrylics, A3 card, brushes etc.</p>
<p><b>4</b> Numeracy Literacy</p>	<p>Students will learn what light is and how reflected light differs from emitted light. Moly-mods will be used to demonstrate how electrons orbit a nucleus and how the excitation of these electrons can lead to the emission of a photon. Flame tests will be used to show practically how emission of light occurs.</p>	<p>To collaborate with other groups and piece together slides to create slide show.</p>	<p>Pace, and those who fully understand light can aid those who find it more difficult to understand</p>	<p>To understand how light works</p>	<p>Question &amp; Answer/ discussion Review of work at end of lesson</p>	<p>Flame loops, sodium chloride, lithium chloride, Copper chloride, Potassium chloride, Beakers, Bunsen burners.</p>
<p><b>5</b> Literacy ICT</p>	<p>Complete O’Keeffe painting, becoming more confident and actually mix onto the card, working back into, adding more detail and more defined colour.</p>	<p>To ensure they have collected images on nebula gas clouds, and to get a frame made minimum, 50cm x 50cm.</p>	<p>Those more confident with acrylics and painting could experiment with adding different mediums and textures to their paint to create different effects.</p>	<p>To have understood colour mixing, developed confidence in using acrylics</p>	<p>Question &amp; Answer/ discussion Review of work at end of lesson</p>	<p>ICT. Sketchbooks, Acrylics, A3 card, brushes etc.</p>

<p><b>6</b> Numeracy Literacy ICT PSHE</p>	<p>Students will try this practical and if successful will see not only how a lens works but how it can magnify as well.</p>  <p>Fig. 1 Optical bench for the image formation study. p = lens - object distance q = lens - screen distance</p>	<p>To experiment at home or in the lab, the use of a lens.</p>	<p>To work in groups, aiding and supporting each other, experimenting with different lens to get different results</p>	<p>To fully understand how a lens works</p>	<p>Question &amp; Answer/ discussion Review of work at end of lesson</p>	<p>Card, box, different lenses, stapler and staples, candle and holder.</p>
<p><b>7</b></p>	<p>Using the collected images of nebula gas clouds, students are to start to recreate he images in an O'Keeffe style. Students need to extract an area, enlarge to fill A3 card, and to paint directly onto the card, but enhancing the colours</p>	<p>Students are to produce a 2/3 images of nebula gas clouds colour tonally. They are to experiment with media. Size 15cm x 15cm</p>	<p>Choice of media to use, challenging themselves by working with media they tend to avoid due to lack of confidence.</p>	<p>To fully understand the work of O'Keeffe by putting her techniques, colour, form etc into context through the painting of the nebula images.</p>	<p>Question &amp; Answer/ discussion Review of work at end of lesson</p>	<p>Collected images, A3 card, Acrylics, brushes etc.</p>

<p><b>8</b> Numeracy ICT</p>	<p>How does a telescope work?  Pupils can use this (or other) website to see how a telescope works,  <a href="http://www.yesmag.bc.ca/how_work/telescope.html">http://www.yesmag.bc.ca/how_work/telescope.html</a>  and then use a telescope to see moon or other celestial object (NOT the Sun!)</p>	<p>Stretch and prepare canvas ready for final piece.</p>	<p>Research different web sites on telescopes and how they work</p>	<p>To actually understand how a telescope works, and how to use one</p>	<p>Question &amp; Answer/ discussion  Review of work at end of lesson</p>	<p>ICT access.</p>
<p><b>9</b> literacy ICT</p>	<p>Complete A3 nebula painting in an O’Keeffe style.</p>	<p>Each group to produce another slide to show their understanding of the project so far</p>	<p>To create O’Keeffe / nebula pieces using different media and techniques.</p>	<p>To have fully understood the work of O’Keeffe and how she techniques.</p>	<p>Question &amp; Answer/ discussion  Review of work at end of lesson</p>	<p>Collected images, A3 card, Acrylics, brushes etc.</p>
<p><b>10</b> literacy ICT</p>	<p>Use of Faulkes telescope  Does exactly what it says in the lesson title and hopefully get “pretty” (pleasing or attractive to the eye, as by delicacy or gracefulness) pictures.  <a href="http://faulkes-telescope.com">faulkes-telescope.com</a></p>	<p>To access web site and to fully understand how the telescope works.</p>	<p>To help each other to understand how to use the telescope and actually take images</p>	<p>To actually take own nebula photos using the telescope</p>	<p>Question &amp; Answer/ discussion  Review of work at end of lesson</p>	<p>ICT access.</p>

<p><b>11</b> literacy ICT</p>	<p>Use of adobe Photoshop to produce colour images  Does exactly what it says in the lesson title as well and hopefully gets "prettier" colour pictures. <a href="http://faulkes-telescope.com/imaging">faulkes-telescope.com/imaging</a> This web site explains in full how to use photo-shop and the use of colour.</p>	<p>To work with images collected and create own colour version by colour layering and enhancing the images</p>	<p>Work together, and help each other especially those more knowledgeable with adobe photo-shop.</p>	<p>To actually enhance and develop own images taken the use of photo-shop.</p>	<p>Question &amp; Answer/ discussion  Review of work at end of lesson</p>	<p>ICT access.  Adobe photo-shop.</p>
<p><b>12-15</b> Literacy Numeracy ICT PSHE</p>	<p>The final piece. Bringing everything they have learnt into a final nebula/O'Keeffe style acrylic painting on canvas. Students are to selection one of their images and extract a detailed section, which they enlarge onto the canvas, through paint. Then exaggerate the colours to be rich and vibrant, with added texture. Mix the colours directly onto the canvas. Add detail</p>	<p>To work on their final piece, as 4 lessons will not be enough time, to layer colour, build up texture and add detail.</p>	<p>Support through guidance and discussion of colours mixed, textures added etc.</p>	<p>To actually realise their intentions and produce a final piece bringing together all that they have learnt and now to be more knowledgeable in the use of colour, light, lenses, use of a telescope and photo-shop. More confident with acrylics and different painting styles</p>	<p>Question &amp; Answers/ Discussion  Review of work at end of lesson  Q Marking &amp; diagnostic comments.  Teacher assessment and level.</p>	<p>Selected images.  Canvas,  Acrylics and added mediums/textures.  Brushes etc.</p>
<p>When paintings are completed, mount development work, ensure slide show is finished and exhibit along with paintings. Students can document their work through photographs and these to can be mounted and exhibited alongside their paintings.</p>						

Here is a list of useful websites and comments on their contents/relevance:

**Colour Theory:**

History of colour. Go to Colour space for an understanding of colour through light.

<http://en.wikipedia.org/wiki/Color-theory>

Basic colour theory addressing all colour issues through art and science. Useful site.

[www.colormatters.com/colortheory.html](http://www.colormatters.com/colortheory.html)

Good colour theory for photography, a little repetitive but great images.

[www.luminous-landscape.com/tutorials/colour-theory.shtml](http://www.luminous-landscape.com/tutorials/colour-theory.shtml)

Describes colour through pigment / electronic colour. Very informative.

[www.cs.brown.edu/courses/cs092/VA10/HTML/start.html](http://www.cs.brown.edu/courses/cs092/VA10/HTML/start.html)

Explains colour through astronomy. Slightly complex but useful. Students need to understand colour through astronomy to create their own colour versions of the images they take using the Faulkes telescope.

<http://cas.sdss.org/dr5/en/proj/advanced/color/definition.asp>

**Astronomical Images:**

Good images to view and use for initial part of the project.

<http://antwrp.gsfc.nasa.gov/apod/>

Very useful and interesting

[www.math.uic.edu/~mccarron/hou/color/](http://www.math.uic.edu/~mccarron/hou/color/)