

YEAR: 7	SUBJECT: D&T	TITLE: Torches
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OBJECTIVE: The pupils will design and make a simple torch based on coin cells. They will be introduced to simple electronics.

STAGE	ADDITIONAL SKILLS	EXTENSION WORK	RESOURCES	H&S
<p>Stage One: The pupils will be shown a range of pictures of existing torches and they will be asked to arrange them in chronological order. PowerPoint used display answers after discussion.</p> <p>They will be shown a selection examples and they will be discussed. Windup, solar and LED torches emphasised.</p> <p>They will produce a rich picture with TORCH in the centre of the page. Appropriate graphics added.</p>	<p>L. Key words associated with the project. N. Concept of chronological order introduced. ICT. Potential research on history of torches. C. Environment discussed in detail. The need to use low power devices and alternative technologies such as windup and solar. HWK. Complete rich picture.</p>	<p>Collect and present research on the History of Torches.</p>	<p>Drawing equipment, ICT access, Internet access.</p>	<p>CONTROL MEASURE</p> <p>CLEAPPS REF.</p> <p>RESIDUAL RISK</p>
<p>Stage Two: The pupils will evaluate a small LED key ring torch. This will be discussed in detail. The technology involved in its manufacture will be emphasised.</p> <p>The pupils will be introduced to the design problem and brief. They will formulate their own design problem and brief. And present this graphically.</p>	<p>L. Keywords relating to the lesson starter especially materials and technology terms. N. Measurement of example LED torch. MMs and CMs discussed. ICT. Potential use of DTP and WP. HWK. Complete Problem and Brief. C. How advances in technology can be used to help conserve energy / resources.</p>	<p>Collect images and information on energy saving technology / devices.</p>	<p>Drawing equipment, ICT access, Internet access. Example products.</p>	<p>CONTROL MEASURE</p> <p>CLEAPPS REF.</p> <p>RESIDUAL RISK</p>
<p>Stage Three: The pupils will design four shapes for the base of the torch. Examples from previous classes will be shown and discussed. The pupils will mark photographs of sample torch projects.</p>	<p>ICT. Potential use of graphics software. N. Marking sample work and working out the average. L. Descriptive words relating to the sample torches emphasised. HWK. Complete s designs and add notes.</p>	<p>Design a torch for a particular purpose and draw it in 3D, adding explanatory notes.</p>	<p>Drawing/writing equipment. ICT access. Pictures of torches Sample torches.</p>	<p>CONTROL MEASURE</p> <p>CLEAPPS REF.</p> <p>RESIDUAL RISK</p>

STAGE	ADDITIONAL SKILLS	EXTENSION WORK	RESOURCES	H&S
<p>Stage Four: The pupils will manufacture their torch design starting with the base.</p> <p>Marking out of the MDF demonstrated and pupils work on transferring their design. Fret saws used to cut shapes.</p> <p>Pupils cut the steel to length after a demonstration. Filing of ends to follow.</p> <p>Pupils drill base and perspex using jig to position holes.</p> <p>Reducing waste and recycling discussed.</p>	<p>L. Key words, especially names of tools and equipment - emphasised.</p> <p>N. Measuring and marking out.</p> <p>C. Reducing waste and recycling of materials explained.</p> <p>HWK. Collect information relating to recycling.</p>	<p>Present the information on recycling.</p>	<p>Drawing/writing equipment. ICT access. Example torches Pictures of torches.</p>	<p>CONTROL MEASURE Demonstrations and teacher instructions given. Supervision of machinery</p> <p>CLEAPPS REF. Hand tools - 1.059 Drilling - 1.031 Fret saw - 1.067</p> <p>RESIDUAL RISK Low</p>
<p>Stage Five:</p> <p>The pupils will smooth and polish their perspex after a demonstration on the polisher.</p> <p>They will add graphics to the base of the stand.</p> <p>They will list improvements and good points regarding their product.</p>	<p>L. Key words, especially names of tools and equipment - emphasised.</p> <p>N. Measuring and marking out.</p> <p>C. Emphasis made on the manufacture of a useful product that can be used by a range of people in their daily lives.</p> <p>HWK. Consider improvements to their product and make a list.</p>	<p>Convert the list of evaluation points into a detailed, coherent written evaluation.</p>	<p>Drawing/writing equipment. ICT access. Example torches Pictures of torches.</p>	<p>CONTROL MEASURE Demonstration on use of files and wet and dry paper. Demonstration of polisher</p> <p>CLEAPPS REF. Polariser - 1.049 Hand tools - 1.059</p> <p>RESIDUAL RISK Low</p>
<p>Stage Six:</p> <p>The pupils will evaluate each others work. They will mark they will mark the work after the criteria has been discussed.</p> <p>The pupils will produce a table of results, working out the average mark. This will be presented either by hand or through the use of ICT.</p>	<p>L. Key words relating to the evaluation criteria - such as quality of finish.</p> <p>N. Mean average and totals.</p> <p>C. Explanation of the importance of HWK. Complete Table of results.</p>	<p>Convert the list of evaluation points into a detailed, coherent written evaluation.</p>	<p>Draw a 3D drawing of the final product and add labels.</p>	<p>CONTROL MEASURE Demonstration on use of files</p> <p>CLEAPPS REF.</p> <p>RESIDUAL RISK</p>