

YEAR: 10	SUBJECT: D&T	TITLE: Wind Power
OBJECTIVE: To introduce the pupils to alternative energy and model / practical skills.		

STAGE	ADDITIONAL SKILLS	EXTENSION WORK	RESOURCES	H&S
<p>Stage one: The pupils will be asked to produce a 'rich picture' with electricity at its centre and production methods around the main theme (Coal, Oil, Wind etc..). Each method of energy production will be explained and alternative energy supplies will be discussed. Pupils watch the renewable energy video. The presentation of the rich picture will also be discussed and demonstrated. The pupils will use traditional drawing techniques in relation to printing (guidelines etc...). Pictures will be added to enhance the rich picture.</p>	<p>L. Keyword list in form of a rich picture. Watch and discuss renewable energy video. N. Measurements for page layout and guidelines. ICT. Technology site reference regarding construction of a rich picture. C. Discussion relating to been a responsible citizen in the conservation of energy. HWK. Complete rich picture.</p>	<p>Pupils to write a short essay on renewable energy and its various forms. Possible use of ICT, word processing or DTP.</p>	<p>Renewable energy video. Drawing equipment. Access to computer network.</p>	<p>CONTROL MEASURE CLEAPPS REF. RESIDUAL RISK</p>
<p>Stage Two: The differences between fossil fuels and alternatives will be discussed. The pupils will describe alternative energy forms; Solar,, Wind,, Sea -(Salter Duck etc...), Hydro - Dams, Pump Storage etc.... Bio-Fuels, Tidal The pupils will be introduced to the advantages and disadvantages of using fossil fuels and alternative energy sources in the production of electricity. They will carefully present the advantages / disadvantages lists.</p>	<p>ICT. Pupils produce a list of advantages and disadvantages of renewable energy forms as a 'table' with clipart. L. Read through and discuss advantages and disadvantages. N. Terms such as giga and mega discussed/explained. HWK. Table of advantages/ disadvantages completed and carefully presented.</p>	<p>Research the production of energy in the UK. The various methods of production, amounts of energy produced and consumption.</p>	<p>Drawing equipment. Access to computer network.</p>	<p>CONTROL MEASURE CLEAPPS REF. RESIDUAL RISK</p>
<p>Stage Three: The pupils will be given the basic design for the wind powered object and they will start designing the figure or movement. Simplicity will be emphasised especially in relation to the movement. The pupils will be expected to design the moving object and not the propellers or base. The pupils will use traditional drawing techniques and equipment.</p>	<p>N. The pupils will work within certain sizes. ICT. At least one design will be completed through the use of graphics software. L. The style and nature of notes will be discussed and examples shown to the pupils. HWK. Complete a number of designs including notes.</p>	<p>Make a card model of the movement involved in the selected idea.</p>	<p>Drawing equipment. Access to computer network. Card and appropriate shaping equipment.</p>	<p>CONTROL MEASURE CLEAPPS REF. RESIDUAL RISK</p>
<p>SKILLS LESSONS The pupils will cut test joints for the corners of the main construction. They will be shown how to cut finger joints and will attempt a sample.</p>	<p>N. Marking out to size ICT. Potential exploded drawing of joint using CAD L. Key words stressed. HWK. Complete CAD drawing if software available at home.</p>	<p>Draw an alternative joint using CAD software or sketch and label by hand.</p>	<p>General workshop equipment</p>	<p>CONTROL MEASURE Teacher Instruction CLEAPPS REF. 1.067 Fretsaws 1.066 Handsaws 1.009 PVA RESIDUAL RISK Low</p>

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<p>Stage Four: The pupils will investigate materials. They will be asked to list the qualities of the materials required for a wind powered object; Light-weight, weather proof, cheap, tough. etc.... The pupils will be shown a range of materials and they will be asked, after handling, which they think are the most suitable. Details regarding a range of materials will be listed and the pupils will present this as a type of tree diagram / rich picture.</p>	<p>ICT. Internet research regarding materials. L. Pupils select the appropriate written material, summarise and produce their own notes. N. Page grid layout explained. C. Pupils made aware of the cost of materials and environmental issues such as sustainable forests. HWK. Presentation of materials research.</p>	<p>Devise simple materials tests to measure such aspects as: Toughness, Durability, Quality of finish, Etc.....</p>	<p>Drawing equipment. ICT access. Basic workshop equipment.</p>	<p>CONTROL MEASURE CLEAPPS REF. RESIDUAL RISK</p>															
<p>Stage Five: Having determined the most suitable materials, the pupils will develop their final design and present it as a working drawing with dimensions. Examples will be shown to the pupils and layout discussed.</p>	<p>ICT. Using appropriate software produce a simple working drawing.HWK. Complete development of final idea.</p>	<p>Produce an alternative design with explanatory notes.</p>	<p>Drawing equipment. ICT access. Basic workshop equipment.</p>	<p>CONTROL MEASURE CLEAPPS REF. RESIDUAL RISK</p>															
<p>Stage Six: The pupils will manufacture their final designs using appropriate techniques. Pupils will construct a sequence drawing for every stage of manufacture.</p>	<p>ICT. Take a digital picture of the finished article and present this with notes. N. Mark out materials to the right measurements. HWK. Complete each stage of the sequence drawing.</p>	<p>Carry out a survey to find out whether people like your final manufactured item.</p>	<p>Drawing equipment. ICT access. Basic workshop equipment. Digital Camera.</p>	<p>CONTROL MEASURE Teacher Instruction, ventilation CLEAPPS REF. 1.031 Drilling machine 1.066 Hand Saws 1.001 Tensol Cement 1.009 PVA 1.067 Fretsaws 1.062 Sander RESIDUAL RISK</p>															
<p>Stage Seven: The pupils will attempt an evaluation of all design work and practical projects.</p> <table border="1" data-bbox="215 1334 1059 1525"> <thead> <tr> <th>NAME</th> <th>ACCURACY</th> <th>MOVEMENT</th> <th>DESIGN</th> <th>OVERALL MARK</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	NAME	ACCURACY	MOVEMENT	DESIGN	OVERALL MARK											<p>C. Solicit the suggestions of others and use this as part of an evaluation. L. Write an evaluation.</p>	<p>Take the findings of the survey (above) and present them in a graphical manner, pictogram etc..... ICT. Use software to present the evaluation.</p>	<p>Drawing equipment. ICT access. Basic workshop equipment.</p>	<p>CONTROL MEASURE CLEAPPS REF. RESIDUAL RISK</p>
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