



HEALTH & SAFETY

TEACHER/TUTOR NOTES & WORKSHEETS

A session should be spent on Health and Safety for working with the club tools.

This should be carried out after the first projects (which require no tools) have been completed.

Dangers.

- Electrocutation from soldering irons.
- Cuts from sharp edges of tools and project components.
- Poisoning from lead in solder.
- Slipping screwdriver.
- Burns from soldering irons etc., etc.

Carry out a risk analysis

- A 'Sample Risk Assessment' for working with soldering irons is attached.
- As a result of carrying out the risk assessment "Instructions and regulations for Equipment use" should be prepared and agreed with the pupils. Samples are included here. They have also been included with the pupil's worksheet.

To prevent accidents ensure that the pupils:

- * Understand and follow the "Instructions and Regulations for Equipment use".
- * Are disciplined in using the tools.
- * Use the correct tools for the job.

First Aid.

Teacher is in charge.

Ask the children to complete the Health & Safety Worksheet

and sign and date it.

Keep it for reference.

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IMAGINEERING CLUBS

Sample Risk Assessment from Hereford and Worcester County Council
Education Department

Soft Soldering with an Electric Soldering Iron

<u>Hazard</u>	<u>People Affected</u>	<u>Risk</u>	<u>Risk Potential</u> <u>Low,</u> <u>Medium,</u>	<u>Reasons</u>	<u>Remedial Measures</u>	<u>Training Needs</u>
Touch iron	Pupils & Tutor	Burn	Medium	Frequent x 3 day injury	Training	In-house
Touch Workpiece	Pupils & Tutor	Burn	Medium	Frequent x 3 day injury	Training	In-house
Faulty electrical insulation	Pupils & Tutor	Electrocution	Low	Improbable x death 1 x 6 = 6	Fit RCD electrical cut off switch. Test equipment regularly. Cut off switch next	
Toxic material (lead in solder)	Pupils & Tutor	Poison	Low	Remote chance x minor	Training	In-house
Solder in face or eye	Pupils & Tutor	Burn	Low	Remote chance x 3 day injury	Wear Safety Goggles	

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SAMPLE INSTRUCTIONS AND REGULATIONS FOR EQUIPMENT USE

SOFT SOLDERING WITH AN ELECTRIC SOLDERING IRON

- Soldering should be conducted in a well-ventilated room, preferably near to some form of extraction.
- Children known to have asthma should have their parent's permission to participate. This may necessitate obtaining their doctor's opinion.
- The Soldering Irons are to be placed in Holder before being switched on and when hot and not being use.
- Soldering Irons are only to be plugged into the mains when a RCD socket is in its line.
- Before first use of a soldering iron all children must observe a demonstration and be warned of the dangers of this electrical and hot tool.
- All children must receive one to one tuition and make sample joints before working on their own.
- One child to operate one soldering iron at a time.
- All pupils and non-participating adults to be at least 2metres from the soldering iron when in operation.
- Supervisor to be adjacent to cut off switch.
- Waste solder to be removed.
- All children and supervisors to wash hands after soldering.
- Electrical equipment to be tested annually, the soldering iron insulation resistance to earth should be at least 10MΩ.
- All children and adults to wear safety glasses or goggles.

ASSEMBLY, SCREWING, USE OF SPANNERS and GLUING

- Correct tools to be available and used for the task in hand.
- All pupils to be instructed in the use of the tools.
- No toxic glue to be used.
- Scissors to be used for cutting paper, card and balsa wood.
- Wire cutters and strippers to be used for cutting wire and removing insulation.
- Take care with the steel strips; they can have quite sharp edges. Handle Gently as like paper they may cut if you slide your finger along the edge.

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Use of Tools

<u>ITEM</u>	<u>DO</u>	<u>DO NOT</u>
Screwdrivers	Take care when using them. Hold them only in the manner instructed. Bear down onto a solid surface. Keep your steadying hand and other people's hands well clear. Hold your screwdriver along the axis of the screw when screwing	Do not point them at anyone. Do not fool about with them. Do not hold your work in your hand When screwing. Do not hold the screwdriver at an angle To the axis of the screw when screwing.
Insulation Strippers	Decide the minimum amount of insulation to remove. Use only in the manner instructed. Make sure the wire to be stripped is not connected to a power supply	Do not get your fingers into the stripping mechanism.
Pliers & Wire Cutters	Keep your fingers out of the jaws of the pliers. Beware that the pliers may not grip the work securely Be especially careful if using to cut wire	Do not use if a spanner will do the job
Soldering Irons & Solder Stand	Use the stand as instructed. Remove unwanted molten solder only on the sponge provided with the stand. Keep your fingers away from the hot parts of the iron and pieces being soldered. Ensure that the soldering iron has been electrically tested as scheduled before use. Ensure soldering iron is cold before packing.	Do not put the hot soldering iron down on any surface where it could cause damage. Do not allow others nearer than 1 metre when you are soldering. Treat the soldering iron with great respect. Take care when using it.
Solder	Usually contains a little lead – wash your hands after soldering Smoke is from flux getting hot (aids soldering) – solder in ventilated area	Do not remove surplus solder except with suitable tool
Glue Guns	Only use low temperature guns unless direct adult supervision is present Pick up only by the handle Do trial squirts onto paper Use wood or cardboard to check if glue is set	Do not touch the nozzle to see if hot Point the nozzle anywhere but onto the area for tryout or application
Hammers	Keep your fingers away from where you are hammering. Make sure you are hammering onto work backed by a solid surface.	Do not use the hammer as a play thing.
Spanners	Ensure that you use the correct sized spanner for the work involved.	Do not use excessive force where the spanner might slip off the nut.
Multimeter	Only use this instrument under the supervision of someone qualified in its use.	Do not probe into the mains electrical supply.
1-9volt power supply (where supplied)	Only use this instrument under the supervision of someone qualified in its use. Ensure the voltage setting is set to that required by the work.	Do not switch on the power until you have plugged in the unit correctly and checked all settings.



HEALTH & SAFETY

1. Give an accident which can happen during an Imagineering Club meeting when:-

Soldering

Using a Screwdriver

Using Pliers

2. If an accident happens who do you tell?

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3. Where is the First Aid kit kept?

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4. Where are the instructions for using the equipment kept?

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5. How far away must the rest of the club members stand when one of them is using the soldering iron?

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6. What do you have to do after using the soldering iron?

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7. Write a story about a club member who did not listen to the instructions about using the soldering iron. (on a separate piece of paper)

My Name is

Date

**PLEASE REMEMBER THAT TOOLS ARE NOT TOYS AND CAN DO DAMAGE
IF NOT USED CORRECTLY**