

USEFUL SKILLS IN SCIENCE PROJECTS

WRITING

All Reports, and other written material (with the possible exception of daily notebooks) should be well written. This means clear, concise, and correct in grammar and spelling. Proof read your material carefully. Don't deep end two munch on yore spell cheque program. (This sentence passed mine.)

DRAWING

Drawings and illustrations on the display board or in reports should be neat and clear, whether hand drawn or done by a CAD program. Graphs should be to-the-point and understandable with the axes and scales labelled. When a function is known to change smoothly, it is better to fair a curve rather than "connect the dots." Think carefully about what kind of graph will best demonstrate the point: a cartesian plot, a polar plot, a bar graph, a pie chart. Avoid overly fancy or cute graphics offered by some software programs. (Oblique pie charts are my pet peeve).

PHOTOGRAPHY

There are two main uses of photographs in a science project. First, they illustrate the apparatus, setup, or environment. Second, they document results. In both cases, the photographs should be clear, uncluttered, and to the point. Control the lighting and background when possible. Be fussy about sharpness and exposure. It's OK to have an assistant take the pictures but the rules require proper citation. If you "doctor" illustrative photos for clarity (e.g. Photoshop), do the minimum necessary and say what you did in the caption. The ISEC has additional rules about photos. Be sure to follow them.

MECHANICAL ARTS

This includes such crafts as woodworking, metalworking, plumbing, etc. In all cases follow accepted practices of good workmanship and pay especial attention to safety. Just as professional scientists send drawings to a shop to be crafted, it is permissible to have a friend, relative or other assistant perform some of construction tasks, so long as the concept and design are your own. Be sure to credit the artisans properly.

ELECTRONICS

Many science and engineering projects involve building electronic circuits. As with the mechanical arts, this should be done in accordance with good standards of workmanship. Learn to wire and solder correctly. There are excellent texts on the subject, such as in "The Radio Amateur's Handbook" published by the American Radio Relay League. Of course you must pay attention to safety, such as not having any hazardous voltages (over 50 V) accessible in the working apparatus.

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