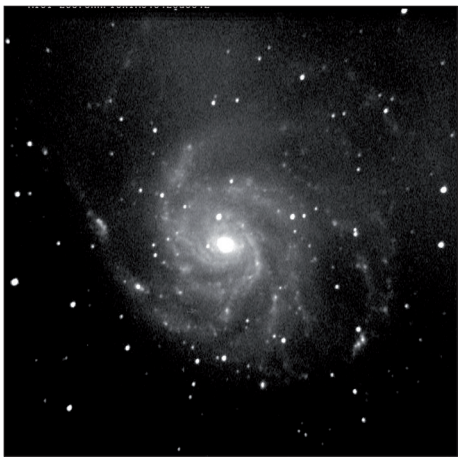
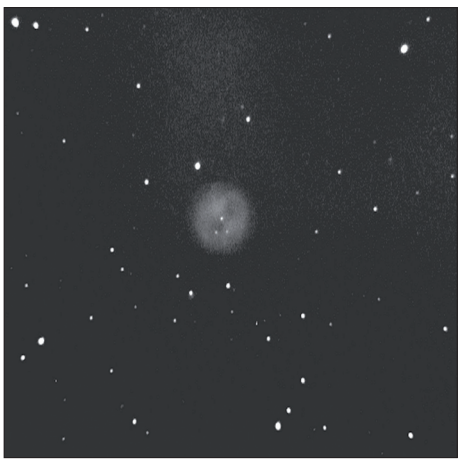
Choosing a telescope for a school

Dr Paul Roche, National Schools' Astronomer





I've been asked on many occasions for advice about choosing the "right" telescope for a school and the honest answer is that there is no such thing. The vast array of instruments available means that potential buyers are faced with a bewildering choice of designs, optical systems and additional gadgets, and prices that range from a few hundred to several thousand pounds.

There are various important technical questions to examine when choosing a telescope, which are addressed in the following sections. For a school there are a number of additional considerations based on the different ways that a teacher might want to use a telescope in comparison with the typical amateur astronomer's needs (should one exist).

An amateur will often have a fairly well defined area of interest (planetary imaging, deep sky observation, etc), whereas a telescope that is destined for a school classroom might be required to show sunspots in the morning and the rings of Saturn in the early evening. Adaptability and flexibility are prerequisites for a school telescope, so it's important to bear them in mind when reading articles aimed at assisting in the selection of a telescope because these are usually written for the amateur market.

Requirements for a school's telescope

Given the range of uses to which a school's telescope may be put, it's vital to choose one that's capable of quick and easy adaptation. In this respect, it's usually better to compromise on the size of the telescope's mirror/lens and ensure a greater selection of gadgets than simply to opt for the biggest telescope your budget will allow. When choosing a telescope for school use, you need to remember the "who, what, where, why and when" that lie ahead.

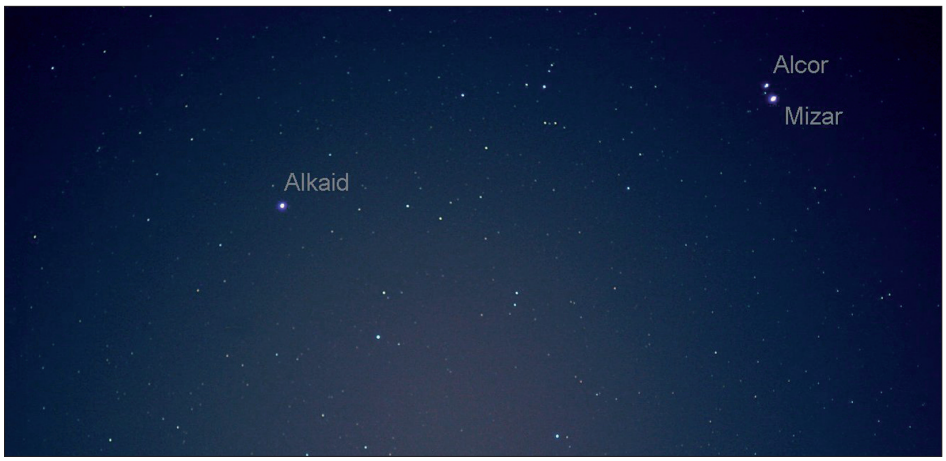
Who?

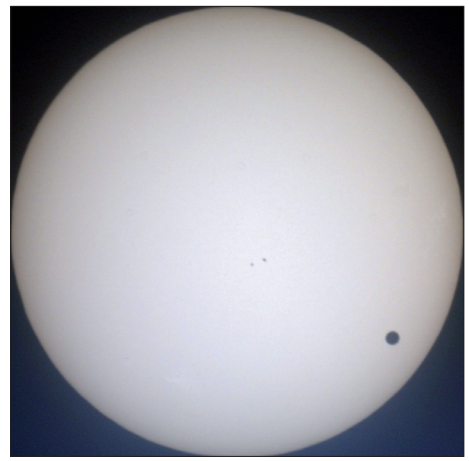
The first question to consider is who will be using the telescope? Is it aimed at the elite – members of the astronomy or science club who will treat it with reverence – or will it spend time in the hands of lower-set groups who may not be quite as respectful? Many telescopes are not robust enough to cope with the degree of maltreatment that they could suffer if they are destined for regular classroom use/abuse, so this will have to be a factor in your choice.

What?

The use to which the telescope will be put will to some extent be defined by the "who" discussed above. If you're hoping to make regular, detailed observations of the satellites of the Jovian planets you'll need a very different instrument to the one that will be used more often as a prop to illustrate the uses of lenses and mirrors in refractors and reflectors.

The question of gadgets is again an important consideration. Will you be making naked-eye observations, attaching a good old-fashioned SLR to make use of the school darkroom or posting high-resolution digital images directly onto the school website?





Where?

Does the school have a permanent home for the telescope or will it need to be packed and unpacked from the science prep room? If a portable solution is required, consideration needs to be given to the necessity of a suitable mount (will a simple tripod do or is there a convenient location where the telescope can rapidly and easily be set up nearby?) and to storage space for when the telescope is not in use.

Unless the school has the space and budget to establish an observatory, I would argue for a small, portable solution in most cases. An instrument that can be moved around, along with its mount and associated paraphernalia, by a group of Year-7 pupils will be infinitely more successful than one that requires a squad of lab technicians and the rugby team to unlimber. Look for manoeuvrability and ease of setting up/taking down – remember that you may have various users, of miscellaneous shapes, sizes and levels of clumsiness, often with little or no experience of handling this kind of instrument.

Why?

What is the purpose of the telescope? Is it to be used as a prop in optics lessons, as an inspirational tool to motivate classes before starting an astronomy topic or a serious piece of kit for advanced students' project work?

And why bother? This may seem like an odd question to raise in a leaflet aimed at helping you to choose a telescope, but, with the increasing access to robotic telescopes available through programmes like the National Schools' Observatory and the Faulkes Telescope Project, do you really need to spend money on your own? Could the money be better spent on whizzy software to ensure that you get the best from the images you can obtain online? Or how about planetarium software capable of transporting your students to distant worlds (and don't tell me you've never wished for that in the past…)?

When?

It may seem like an obvious statement, but your potential users will most often be unavailable when your new telescope is sitting within its well oiled dome in a suitably dark location. You should consider using it as a solar instrument because the impact of close-up views of the Sun cannot be underestimated. Showing your class a view of their local star – complete with spots, flares and assorted interesting features – can do wonders for the membership of the after-school club that will be using the same telescope on cold nights to image deep-sky wonders.

Finally…

Once you have considered these questions, go to **www.astronomy-education.com** for a series of pages to help you through each stage of the decision-making process and some regularly updated examples of which particular telescopes will satisfy your various potential needs.

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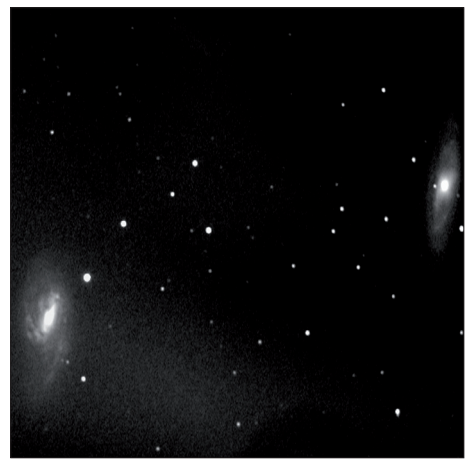

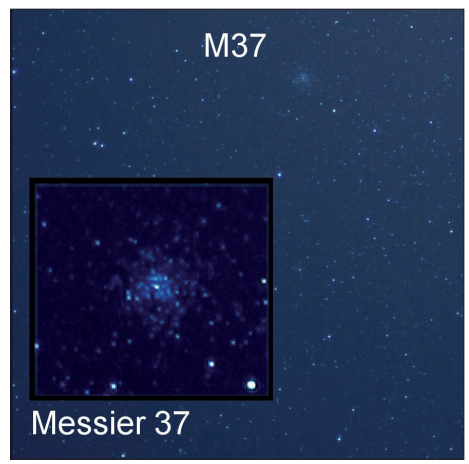

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