



Why do telescopes come in different sizes?

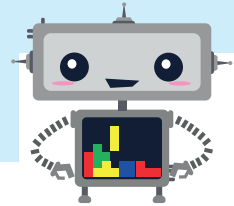
Summary

Telescopes come in all shapes and sizes, this activity will describe the three different types of telescope in the LCO network and why we need them.

Age: 8 – 12 years

Materials: Computer, projector and [SEROL presentation part 2](#)

Duration: 15 minutes



1. Using the SEROL presentation part 2 (slide 7, additional telescope photos on slides 8-10) explain that the LCO network includes three sizes of telescope: 2m, 1m and 40cm. Remember to explain that the size corresponds to the diameter of the telescope's main mirror and not the telescope itself. You can cement this idea using the following size comparisons:

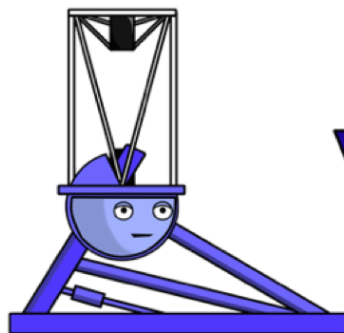
Tip: Before starting this activity we strongly recommend you complete the following activity: "The Search for Dark Skies".

- 2m telescope is the size of a double-decker bus
- 1m telescope is the size of a family car
- 40cm telescope is the size of a dustbin

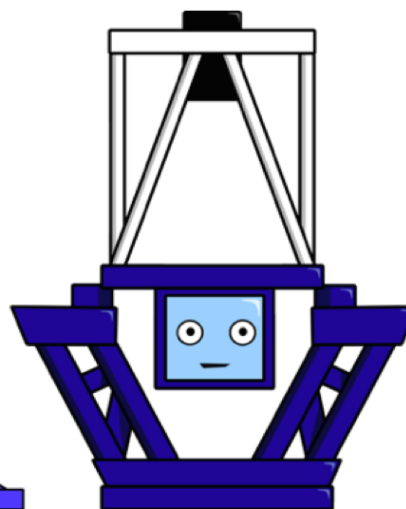
TELESCOPE SIZES



40cm
Size of a dustbin



1-metre
Size of a car



2-metre
Size of a double-decker bus

2. Students are likely familiar with refractor telescopes which use lenses, and may not understand how reflector telescopes work. Use slide 11 to explain that:

- a. Light travels into the telescope at the opening.
- b. A large, curved mirror at the back of the telescope then bounces the light towards a smaller mirror.
- c. The small mirror reflects the light back through a gap in the center of the big mirror and into a “camera” underneath.



3. Ask students whether they can explain why the LCO network contains different telescope sizes. (Larger mirrors mean the telescope can collect more light. The 2m telescopes can see fainter objects in details.)

4. In addition, each of the telescopes has a different field of view. The 40cm telescopes can see the largest patch of sky at once (top) and the 2m the smallest (bottom). A larger field of view is ideal for tracking rapid-moving objects such as asteroids. (The middle image was taken with a 1m telescope).

5. Demonstrate the field of view of each telescope by inviting the students to play “Find the Asteroid” (Slides 12-70). The students will look for the moving object. (Asteroids travel at speeds of around 70km/s, while the stars will stay in the same location on each image. The asteroids can be seen moving through the images as you flick through them).

Each set of images is from a different telescope, starting with the 2m and ending with the 40cm, you can see the field of view grows larger.

