How Big? How Far? Homeschoolers Explore the Lives of Stars

On October 9, seventeen young astronomers spoke into a microphone, waited two and a half seconds, and heard their own voices come back after a trip of nearly half a million miles to the Moon and back.

The students, ages 8 to 15, came with eight parents and leaders from the Discovery League homeschool group. They spent four hours at a hands-on astronomy workshop hosted by the Deep Space Exploration Society (DSES) at the Plishner Center for Radio Astronomy and Science, five miles south of Haswell.

The day opened with space-telescope images of the Trifid Nebula, where new stars are being born. Students also saw the Crab Nebula, the brilliant remnants of a star that exploded nearly a thousand years ago.

Then students faced a hard question: how big is all this? To understand this they used peppercorns, pinheads, and a pecan. If the Sun were the size of a soccer ball, Earth would be a peppercorn and Jupiter a pecan. Next came another hard question: how far is the Sun? the planets? the stars? Using the peppercorn Earth scale, students walked off distances from the Sun to its planets. Earth landed 26 paces from the soccer-ball Sun. Jupiter was 135 paces out. From there, the Sun was just a small dot. Saturn, nearly a quarter mile away, wouldn't fit on the property. And the nearest star beyond our Sun would sit about 4,000 miles away, roughly as far as Iceland.

Volunteers Ralph Reed and Pat McDivitt of the Colorado Springs Astronomical Society set up special solar telescopes. Students counted sunspots and sketched glowing flames of gas leaping off the Sun's edge.

In the DSES control room, board member and space scientist Alex Nersesian sent the students' voices to the Moon and back. They asked: "Is anyone there?" "What are you doing, Moon?" They laughed to the echoed, unanswered questions.

About the Deep Space Exploration Society:

The Deep Space Exploration Society (DSES) is a Colorado nonprofit organization dedicated to radio astronomy, amateur radio, scientific research, and STEM education outreach. DSES operates the Plishner Radio Telescope and Science Center near Haswell, Colorado, and supports educational programs, citizen science initiatives, and deep-space communication projects. Website: https://dses.science