Since 1998 Texas science and math teachers have learned about SOFIA, technology, and astronomy. They carry knowledge, skills, and activities back to their classrooms.

The Echelon Cross Echelle Spectrograph (EXES) is a high dispersion instrument designed by John Lancy for SOFIA. The heart of EXES is a meter-long aluminum echelon grating that is used in the 1500th order to obtain R=100,000 at 5.5 to 28.5 μm. Other modes allow R of about 2000 and 10,000.

As the teachers’ knowledge and skills grew, several were hired to co-facilitate workshops at McDonald Observatory.

Teacher Quote:
Participating in the SOFIA EXES teacher program has given me professional development opportunities that have shaped me as a teacher. The activities and insights I bring back to my department and students have been well loved. My leadership skills have been encouraged, and my lessons have been enriched. Last year I was awarded Teacher of the Year at my school; I feel the honor is a direct result of the opportunities and learning gained in this program.

A typical meeting included an update on SOFIA, an expert talk on a science or technology topic, and a Standards-linked activity that they can carry back to use in their classrooms.

Teacher Quote:
The relationships developed with a network of educators all with an interest in astronomy has led to me becoming a better and more knowledgeable teacher. The EXES-SOFIA outreach group has been and is the most valuable professional development venue I have experienced in over 20 years of teaching.

Sample Instrumentation Topics:
- Dewar design
- Spectroscopy
- SOFIA’s Active Astronomy Kit
- Building Galileoscopes
- Building Dobsonians

Sample Astronomy Topics:
- Stars and stellar evolution
- Formation of planetary systems
- Multi-wavelength astronomy

Local field trips included tours the Blanton Museum of Art, The Harry Ransom Center to view rare books on the history of astronomy and the LBJ Library for a special exhibit on the US space program in the 1960s.

Teacher Quote:
Several of our field trips during EXES meetings have given me ideas for cross-curricular lessons with history. Usually I connect with the math teachers, so the social studies teachers were surprised and pleased when I talked to them about my ideas. They are happy I include their subject in my class, and it has helped build a stronger relationship between the science and social studies departments.

Some teachers took field trips to McDonald Observatory. This group is visiting MONET which was later used in Austin for remote observing.

Teacher Quote:
Trips to McDonald Observatory stimulate scientific discussions with other group members and our students since we get to do real astronomy. My experiences there are priceless! Dr. Sneden always challenges us with problems and expects us to discover the answers.

Our staff welcomed some teachers to participate in observing runs on Mauna Kea, with the IRTF.

Teacher Quote:
After three years, I’m still telling my students about my experiences on Mauna Kea. The challenges of high altitude, freezing weather, and night observing didn’t keep us from staying involved as the nights finished by in a week.

Another Teacher Quote:
Observing Titan at the NASA IRTF on Mauna Kea really gave me a sense of the way astronomers work at observatories.

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