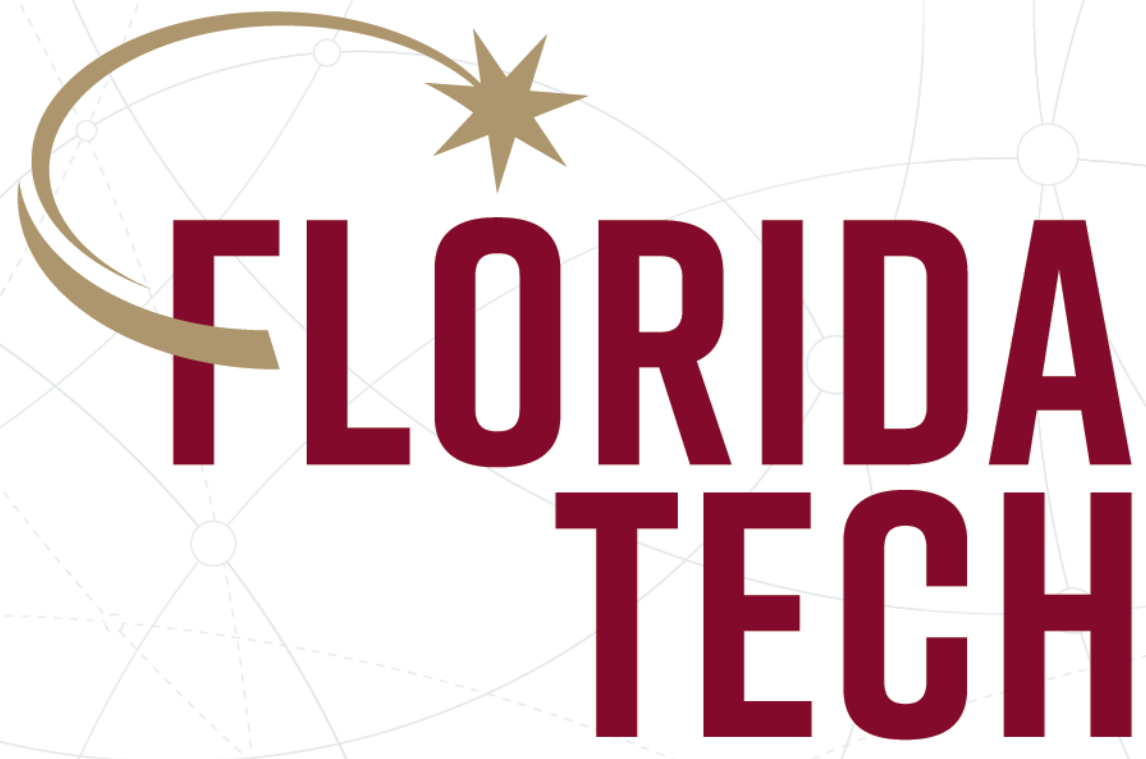


Kennedy-Ortega Space Science Education Program (KOSSEP)

Serena DeCandia, sdecandia2019@my.fit.edu



INTRODUCTION

The Kennedy–Ortega Space Science Education Program (KOSSEP) is a mobile observatory initiative developed in partnership with the Kennedy Space Center Visitor Complex (KSCVC). Its goal is to bridge classroom learning and real astronomical observation through a three-phase instructional model:

- **Pre-Visit:** Standards-aligned classroom preparation
- **On-Site:** Field experience with professional space science equipment
- **Post-Visit:** Reflection, analysis, and continued inquiry

This model connects NGSSS Earth & Space Science standards with authentic STEM practices to enhance engagement and conceptual understanding.

OBJECTIVES

- Deliver hands-on space science experiences with professional astronomical equipment to grades 4-12 classrooms.
- Develop NGSSS-aligned astronomy curricula and supporting classroom resources.
- Conduct professional development workshops that help educators implement space science content effectively.
- Engage space science undergraduates, graduate students, and professional astronomers in outreach and classroom instruction.
- Strengthen partnerships between Florida Institute of Technology, Kennedy Space Center Visitor Complex, and Brevard County schools.

METHODS

Curriculum and Framework Development:

Florida’s Earth and Space Science benchmarks were identified through CPALMS and aligned with supporting educational frameworks and pedagogical principles. From this alignment, an external resource database was created, featuring over 120 NASA Jet Propulsion Laboratory and Astronomical Society of the Pacific activities. The database connects directly to each benchmark, allowing identification of instructional gaps and opportunities to adapt or update materials for KOSSEP. It continues to grow as new resources are reviewed and integrated.

Collaborative Model Building:

During an upcoming multi-day teacher workshop, a modular Pre-On-Post instructional model will be developed in collaboration with educators. This model will bridge classroom learning, hands-on telescope use, and post-observation reflection. The workshop will also guide refinement of lesson sequences and ensure alignment between classroom instruction and the mobile observatory experience.

Ongoing Evaluation:

KOSSEP emphasizes continuous improvement through educator and participant feedback gathered from structured reflections and debrief sessions. These insights guide refinements in telescope operations, instructional pacing, and event coordination, shaping future classroom pilots and educator workshops.

EARLY IMPLEMENTATION AND PILOT ACTIVITIES

Early Program Rollout

KOSSEP’s early phase focused on refining logistics, volunteer coordination, and instructional delivery through outreach programs and pilot events. These experiences helped test equipment setup, audience engagement, and collaborative teaching strategies.

School Pilot: West Melbourne School of Science

KOSSEP’s first school outreach took place with third- and fourth-grade students at the West Melbourne School of Science. Guided by a custom Observation Passport, students explored multiple telescope stations, learning observation and critical thinking skills while the team refined grade-appropriate teaching methods.

Partnership with KSCVC

Under the KOSSEP framework, the Ortega Observatory team participated in three major outreach events at the Kennedy Space Center Visitor Complex (two Kennedy Under the Stars and one Employee Night), strengthening the program’s partnership with KSCVC.

Through this collaboration, three international student camps were also hosted at the observatory, two in summer 2025 and one in fall 2025, where students engaged in hands-on astronomy using custom KOSSEP materials and facilitator guides. Activities included Telescope Techs, Light Detectives, Solar Observations, and Galaxy Sorting.

Ortega Observatory at Kennedy Under the Stars



The Ortega Observatory team participated in their first Kennedy Under the Stars event at the Kennedy Space Center Visitor Complex, engaging nearly 2,000 visitors in telescope observation and public astronomy outreach.

Hands-On Astronomy Instruction at the Ortega Observatory



Ortega Observatory members guide visiting international students through telescope assembly during a KOSSEP learning session, emphasizing collaborative, hands-on science education.

International Students in the Observatory Classroom



Visiting students from Brazil complete guided KOSSEP activities in the Ortega Observatory classroom, connecting concepts from telescope observations to written exercises.

University and Community Engagement

Observation nights at Florida Tech provided students, faculty, and staff with opportunities for hands-on astronomical observation and helped the team enhance setup and communication skills.

Educator Collaboration

During Educators Night Out at KSCVC, the team connected with local teachers and gathered feedback, forming the foundation for future co-design workshops and curriculum development partnerships.

FUTURE STEPS

KOSSEP continues to advance its mission of bringing authentic astronomy education experiences to classrooms and communities across Florida.

Upcoming Initiatives:

- Host the upcoming multi-day teacher workshop to collaboratively develop the Pre–On–Post instructional model and co-design classroom lessons.
- Expand the external resource database with new benchmark-aligned activities and instructional resources.
- Conduct structured classroom pilots to evaluate student learning outcomes and engagement.
- Strengthen partnerships with schools, educators, and institutions across the state to broaden program reach and sustainability.
- Continue developing the KOSSEP team’s science communication and instructional skills to enhance engagement across age groups.

By combining professional astronomical equipment, experiential instruction, and educator collaboration, KOSSEP is establishing a scalable model for accessible and impactful space science learning.

The Next Step in Mobile Astronomy



A newly acquired large telescope and custom transport trailer increase the reach of KOSSEP’s mobile observatory, allowing for quicker setup and expanded outreach opportunities.

Mobile Telescope Deployment



Portable telescopes prepared for use during a KOSSEP field event, highlighting the mobility and accessibility of the observatory setup.

SOURCES

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