



Memorandum of Understanding

This Memorandum of Understanding (MOU) is made by and between SETI Institute, of 189 North Bernardo Ave Suite 100, Mountain View, California 94043, and Perris Union High School District of 155 E. Fourth Street, Perris, CA 92570.

Background

The SETI Institute is a nonprofit scientific and educational organization founded in 1984 with the mission statement: *“to explore, understand, and explain the origin and nature of life in the universe, and to apply the knowledge gained to inspire and guide present and future generations. We have a passion for discovery, and for sharing knowledge as scientific ambassadors to the public, the press, and the government.”*

The SETI Institute *has substantial experience in curriculum development and educator professional development (PD) programs. The SETI Institute has received NASA funding to conduct the Airborne Astronomy Ambassador (AAA) education program that harnesses the unique and inspirational attributes of NASA’s Stratospheric Observatory for Infrared Astronomy (SOFIA) to effectively engage learners in NASA science education programs and activities, improve science teaching, and impact student standards-based classroom outcomes. SOFIA is an extensively modified Boeing 747SP carrying a 2.5-meter (100-inch) reflecting telescope, the largest airborne observatory in the world, capable of making observations that are impossible for even the largest and highest ground-based telescopes. SOFIA’s onboard facilities include a console dedicated for use by teachers in the AAA program.*

Purpose

The purpose of this MOU is to establish an agreement between the SETI Institute and Perris Union High School District that will foster: (1) development and delivery of science teacher professional development (PD), (2) support classroom implementation of a NASA AAA science curriculum, (3) enable measurement of student standard-based learning outcomes in terms of understanding specific science concepts, crosscutting ideas, and science practices; and (4) enable measurement of student attitudes toward STEM, STEM learning, and STEM careers.

The above goals will be accomplished via the work and activities described below.

Scope of Work

The SETI Institute will use their contractor WestEd for evaluation services throughout this program, as specified below. Please note that any and all student assessment and evaluation data gathered will be aggregated and anonymous, with no associated individual student identification.

I. AAA Teacher Participant Selection

Teachers eligible for AAA participation in 2020 (SOFIA Cycle 8) nominally will be entering at least their 3rd year of service in fall 2019, with high school teaching assignments including at least two classes of Physics (other than AP

Physics), Physics of the Universe (or other integrated model), Astronomy, and/or Earth & Space Science. Qualifying courses must include a curriculum component that addresses the electromagnetic spectrum and/or astronomy. Teachers must be assigned to teach these courses during the 2020-21 school year. (Note: Selected teacher participants must also receive final approval from NASA HQ. The number of participants from each district are TBD.)

Anticipated timeline: AAA application and selection processes will occur during fall 2019; selected AAA teacher participants (AAAs) will be announced by December 2019.

Roles and Responsibilities

- **SETI Institute:**
 - Coordinate and oversee online application processes and teacher agreement documents.
 - Upon closure of the application deadline, the SETI Institute will compile applications for Rochester Community Schools, AAA program staff, WestEd, and NASA HQ for review and selection.Performed by WestEd under the SETI Institute:
 - Receive and review applications with AAA program staff during selection process.
- **Perris Union High School District:**
 - Disseminate program opportunity and application information.
 - Vet teacher eligibility and participate in teacher selection process.

II. AAA Teacher Participant Preparation and Professional Development

(Includes NASA SOFIA content, 3-dimensional science lessons, and curricular component training.)

Anticipated teacher PD commitments are to a blended learning experience extending from **January through July of 2020** comprised of: (1) approximately 6 biweekly webinars, (2) approximately 25 hours of asynchronous online content learning, and (3) a day-long in-person workshop (location TBD).

Roles and Responsibilities

- **SETI Institute:**
 - Pay any online training course registration fees, if applicable.
 - Plan, coordinate, and deliver NASA SOFIA-specific content (electromagnetic spectrum; multi-wavelength astronomy) and hands-on curriculum component training and preparation through a blend of web-based synchronous and asynchronous sessions plus a full-day, in-person workshop.
 - Certify, via letter to each AAA total PD hours of program participation, before, during, and after the SOFIA flight(s).
 - Provide science activity materials for schools/districts to keep.
 - Provide other curriculum support, as needed.Performed by WestEd under the SETI Institute:
 - Interview select AAAs on the sufficiency of support materials and PD exposure.
 - Survey all AAAs on the sufficiency of support materials and PD exposure.
- **Perris Union High School District:**
 - Support selected AAAs' commitment to complete program PD and other flight week preparations.
 - Provide district liaison (district science coordinator or equivalent) to facilitate and monitor teacher's participation in the project.

III. AAA Teacher Participant SOFIA Flight Week

(Intensive STEM immersion experience)

AAAs will participate in an intensive flight week experience in Palmdale, CA, during fall 2020 (SOFIA Cycle 8). During this week, AAAs will be out of their classroom. Flight weeks will include two scheduled overnight flights aboard SOFIA, NASA facility tours, and meetings with Subject Matter Experts (scientists and engineers). AAAs will participate in SOFIA flight weeks in groups (usually of 4 AAAs), and are scheduled taking AAA availability into account. Note: SOFIA flight schedules are not under the control of the AAA program. The program is committed to insuring a minimum of one SOFIA flight for all AAAs, which might require rescheduling and a return visit to Palmdale.

Roles and Responsibilities

- **SETI Institute:**
 - Coordinate submission of NASA SOFIA forms and other documents required for flight participation.
 - Provide flight facilitator and official NASA escort during all aspects of flight week. During flight week, the AAAs will: (1) Fly on one or more overnight observing mission(s) aboard SOFIA during the fall of 2020; (2) participate in pre- and post-flight trainings and meetings associated with the flight.
 - Provide AAA travel expenses, housing (private room), and meals for required pre-flight meetings, flight, and required post-flight meetings costs.
 - Provide and foster access for AAA participants to NASA Subject Matter Experts (SMEs: scientists, engineers, and other professionals)
 - Lead and coordinate all media and NASA public affairs actions related to AAA program participation.
- Performed by WestEd under the SETI Institute:
 - Observe AAA experiences with SETI Institute-created support materials during select flight week.
 - Interview select AAAs during flight week.
- **Perris Union High School District:**
 - Support potential, high profile/positive media exposure during flight weeks led by SETI Institute Public Affairs manager.
 - Support selected teacher AAAs involvement in flight week activities, including providing substitute teacher coverage during AAA school absence. AAA participants will travel to SOFIA's base in Palmdale, California (near Los Angeles) for the flight week. Please note, this means leaving their classroom / work site for a week.
 - The Ambassador program depends on districts committing to the release of teachers even if flight schedules change on short notice. Cost of substitute teachers to be borne by Rochester Community Schools.

IV. Curriculum implementation and Measurement of Student Outcomes

AAA participants will implement the curriculum component after their flight week experience. Content will cover appropriate NASA SOFIA-related science concepts focused on the topics: the electromagnetic spectrum and multi-wavelength astronomy. Evaluation instruments will be employed to determine standards-based student learning outcomes and changes in student attitudes toward STEM.

Roles and Responsibilities

- **SETI Institute:**
 - Refine evaluation instruments in alignment with curriculum component and activities.
 - Provide access to NASA Subject Matter Experts (SMEs: scientists, engineers, and other professionals) for student questions, real world science guidance, and/or classroom presentations (virtual or in person) as driven by school/curriculum needs.

- Provide continued post-flight PD activities, pending funding extension.
- Performed by WestEd under the SETI Institute:
- Support and partner with the SETI Institute in refinement of test instruments, in alignment with curriculum component and activities
 - Collect and analyze anonymous learning instrument data from students of AAAs.

- **Perris Union High School District:**
 - Support AAAs implementing NASA AAA curriculum with students in designated courses during the 2020-2021 school year.
 - Support AAAs administering encoded or anonymous student pre- and post-assessments and surveys required by research/evaluation.
 - Support AAAs completing any required documentation of their curriculum implementation, feedback on any implementation issues, and feedback on the usefulness of the curriculum for their students' learning.
 - Provide SETI Institute / WestEd with school or district-level data deemed necessary for evaluation and/or aggregated reporting.

Timeline Summary

- (1) MOU in place before 2019 Fall AAA application window.
- (2) Applications of Cycle 8 AAAs accepted and reviewed during fall 2019 (exact dates TBD).
- (3) Announcement of AAA selection before end of calendar year 2019.
- (4) AAA professional development, January – July 2020.
- (5) Palmdale visits and SOFIA flight weeks, August – December 20, 2020 (exact dates TBD).
- (6) Implementation of NASA AAA curriculum module during 2020-21 school year.

Funding: The MOU is not a commitment of specific funds. The SETI Institute will be responsible for AAA travel expenses, housing (private room), and meals for required pre-flight meetings, flight, and required post-flight meetings costs. Perris Union High School District will absorb the cost of substitute teachers while the teachers are out of the classroom during the flight week. If Perris Union High School District elects to authorize travel by a science coordinator or equivalent to Palmdale, California to observe flight week events, Perris Union High School District will absorb travel expenses and time away from regular assignments.

Duration: This MOU is at-will and may be modified by mutual consent of the authorized officials, signed below. This MOU shall become effective upon signature by the authorized officials and will remain in effect until December 31, 2020 or until modified or terminated by mutual consent.

DISCLAIMER

In the event the Government does not continue the support of this MOU to allow completion of the work addressed, neither party will be liable to the other for any incurred expenses.

This MOU is the complete agreement between parties and may be amended only by written agreement signed by each of the parties involved.

SETI INSTITUTE:



By: Bill Diamond
Title: President & CEO

Date: Dec 11, 2019

PERRIS UNION HIGH SCHOOL DISTRICT

By: Dawn Bray
Title: Director of Purchasing

Date: _____