

Memorandum of Understanding

This Memorandum of Understanding (MOU) is made by and between SETI Institute, of 339 Bernardo Ave Suite 200, Mountain View, California 94043, and William S. Hart Union High School District, 21380 Centre Pointe Parkway, Santa Clarita 91350.

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 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 observatories and multi-wavelength astronomy resources to improve science teaching, impact student standards-based classroom outcomes, and effectively engage learners with NASA science education programs and activities. The AAA program provides teachers access to NASA assets such as the Stratospheric Observatory for Infrared Astronomy (SOFIA), that has a console dedicated for use by AAA teachers, and the Infrared Telescope Facility (IRTF) on Mauna Kea in Hawai‘i.

Purpose

The purpose of this MOU is to establish an agreement between the SETI Institute and William S. Hart Union High School District that will:

(1) foster development and delivery of science teacher professional development (PD), (2) support classroom implementation of a NASA AAA science curriculum, (3) enable measurement of changes in 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

I. AAA Cycle 10 Teacher Participant Selection

Teachers eligible for AAA participation in 2022 (SOFIA Cycle 10) nominally will be in least their 3rd year of service in fall 2020, with middle or high school teaching assignments including at least two classes of Physics (other than AP Physics), Physics of the Universe (or other integrated model), Astronomy, Physical Science, 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 2022-23 school year. (Note: Selected teacher participants must also receive final approval from NASA HQ. The number of participants from each district is TBD.)

Anticipated timeline: AAA application and selection processes will occur during fall/early winter 2021; selected AAA teacher participants (AAAs) will be announced in January 2022.

Roles and Responsibilities

- **SETI Institute:**
 - Coordinated and oversaw online application processes and production of teacher agreement documents.
 - Upon closure of the application deadline, the SETI Institute compiled applications for review and selection.
- **William S. Hart Union High School District:**
 - Disseminate program opportunity and application information.

- Vet teacher eligibility and participate in the final selection process for teachers recommended for participation by the review panel.

II. AAA Cycle 10 Teacher Participant Professional Development (in preparation for STEM immersion experience)

AAA participant professional development (PD) includes NASA SOFIA and multi-wavelength astronomy content, NASA research processes and resources, and 3-dimensional science curricular component training.

Anticipated teacher PD commitments are to a blended learning experience extending from **February through July of 2022** 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; virtual options may be made available if necessary due to travel restrictions and/or COVID-19 concerns).

Roles and Responsibilities

- **SETI Institute:**

- Pay any online training course registration fees, if applicable.
- Plan, coordinate, and deliver NASA 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 STEM Immersion Experience, such as SOFIA flight week.
- 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.

- **William S. Hart Union High School District:**

- Support AAA teachers' commitment to complete program PD and other flight week preparations.
- Provide district liaison (district science coordinator or equivalent) to facilitate and monitor teachers' participation in the project.
- Optional: District liaison travel expenses and time for in-person workshop participation.

III. AAA Cycle 10 Teacher Participant STEM immersion experience

AAAs will participate in a week-long intensive STEM immersion experience expected to occur during the later portion of 2022. During that week, AAAs will be out of their classroom. STEM immersion weeks will include two scheduled overnight observatory experiences (e.g., aboard SOFIA or at the IRTF on the summit of Mauna Kea), NASA facility tours, and meetings with subject matter experts (scientists, engineers, and other professionals). AAAs will participate in STEM Immersion weeks in groups (usually of 4 AAAs) and will be scheduled taking AAA availability into account.

Roles and Responsibilities

- **SETI Institute:**

- Coordinate submission of NASA forms and other documents required for STEM Immersion week participation.
- Provide facilitator and official NASA escort during all aspects of STEM Immersion week.
- Provide AAA travel expenses, housing (private room), and meals for the STEM immersion week.
- Provide and foster access for AAA participants to NASA subject matter experts.
- Lead and coordinate all media and NASA public affairs actions related to AAA program participation.

Performed by WestEd under the SETI Institute:

- Evaluate AAA experiences with SETI Institute-created support materials during STEM immersion week.
- Interview select AAAs after STEM immersion week.

- **William S. Hart Union High School District:**

- Support potential, high profile/positive media exposure during STEM Immersion weeks led by the SETI Institute's Public Affairs manager.

- Support selected teacher AAAs' involvement in STEM Immersion week activities, including providing substitute teacher coverage during AAA school absence. 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 STEM immersion week schedules change on short notice. Cost of substitute teachers will be borne by William S. Hart Union High School District.

IV. Curriculum implementation, Measurement of Student Outcomes, and Program Evaluation

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.

AAA participants will implement the curriculum component after their flight week experience. Content will cover appropriate NASA related science concepts focused on the topics: the electromagnetic spectrum and multi-wavelength astronomy. Lessons feature authentic research case studies. 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 for student questions, real world science guidance, and/or classroom presentations (virtual or in person) as driven by school/curriculum needs.
 - Provide continued post-STEM immersion week PD activities.
- 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 STEM attitudes instrument data from students of AAAs.
- **William S. Hart Union High School District:**
 - Support AAAs implementing NASA AAA curriculum with students in designated courses during the 2022-2023 school year.
 - Support AAAs administering encoded or anonymous student pre- and post-assessments and surveys used for program 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 anonymous student data on students of AAA teachers or schools (TBD) deemed necessary for evaluation and/or aggregated reporting. Demographics may include race/ethnicity, and free or reduced lunch status.

AAA Cycle 10 Timeline Summary

- (1) Applications of Cycle 10 AAAs accepted from supported teachers: reviewed December 2021.
- (2) MOU processes initiated January 2022.
- (3) Announcement of AAA selection, February 2022 (exact date TBD).
- (4) AAA professional development, February – July 2022.
- (5) STEM Immersion weeks, fall 2022 – winter 2023 (exact dates TBD).
- (6) Implementation of NASA AAA curriculum module during 2022-23 school year.

V. Disclaimers

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 all required in-person meetings and STEM immersion week activities. William S. Hart Union High School District will absorb the cost of substitute teachers while the teachers are out of the classroom during the STEM Immersion week. If William S. Hart Union High School District elects to authorize travel by a science coordinator or equivalent to join AAAs during STEM Immersion week events, William S. Hart 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 July 1, 2023, 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:

William S. Hart Union High School District

A handwritten signature in black ink, appearing to read "Steve Bourdow".

By: Steve Bourdow
Title: Deputy Director of Operations

A handwritten signature in black ink, appearing to read "Mike Kuhlman".

By: Mike Kuhlman
Title: Superintendent

Date: 1/26/2022

Date: 2/15/22