I. OVERVIEW DESCRIPTION

The “Astrophotography & Art @AMSE” program can be broken into three main components:

- Program participants attend online training sessions (1) to control ground-based telescopes and (2) analyze/colorize images using MicroObservatory.org resources. The Universe of Learning’s Electromagnetic Spectrum Musical was shown during one of the sessions to supplement the online instruction. Participants were also encouraged to enter the NASA Astrophotography Challenge.
- Participants receive painting instruction with a Bob Ross Certified Instructor in using a wet-on-wet oil painting technique to render colorized space images from the MicroObservatory to canvas.
- Digital images and oil paintings are compiled into a museum exhibition.

II. PROGRAM DETAILS

- Goals
  o Designed to promote both STEM and STEAM learning in an informal science setting
  o Developed to target secondary level students
  o Offered to provide professional development opportunities to science and art educators
  o Displayed to communicate how both science and art are being explored locally
- Target audience
  o High school students (or middle school students) with interest in both science and art
  o Secondary level science and/or art teachers desiring STEM/STEAM-related professional development opportunities
- Timeline
  o May 2019: Two one-hour, online training sessions with Mary Dussalt
  o June 2019: Students create colorized space images using MicroObservatory. These images are forwarded to the artist for planning the painting session.
  o July 2019: One four-hour session with artist
  o August – early September 2019: Digitals and oil painting are compiled into an exhibit
  o September 20, 2019: Exhibition goes on display of the Community Gallery.

III. PROGRAM MODEL

- Staffing
  o Educator works with volunteers or other personnel to promote and organize the program, host online training and painting sessions, and display exhibits.
  o Universe of Learning staff provided online MicroObservatory training.
  o Local Bob Ross Certified painting instructor offered painting session on contract. This role might be filled by a local art teacher familiar with wet-on-wet oil painting techniques.
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- Volunteer or staff member with dedicated time to take photos and acquiring all the photo releases during all the sessions.

**Recruitment**
- Distributed a promotional flyer for the program via Constant Contact
- Posted a promotional slide on the large digital screen in the museum lobby
- Print copies of the promotional flyer were provided at the museum’s information table and in the museum foyer.

**Activity outline/facilitation guide**
- Plan activities and budget. Determine target audiences.
- Set dates with Universe of Learning online instructor and artist.
- Create promotional materials and distribute.
- Collect contact information for all respondents. Confirm whether each respondent will be able to participate based on the program requirements.
- A few days before each session, remind participants that they will need to bring their own computer or tablet to access the MicroObservatory site. Note that your site will need to provide wifi for these sessions.
- Plan online MicroObservatory instruction through Universe of Learning. The two online sessions each last for one-hour, but at least 1.5 hours should be planned for introduction and follow up time. The facility must provide adequate wifi resources and plenty of extension cords so that participants can keep their devices charged. Take safety precautions to avoid trip hazards due to all the extension cords. Take photos and get photo releases.
- Ask participants to send in their favorite images to be painted and/or used in the digital gallery. These images can be forwarded to the artist to plan for supplies and painting techniques/strategies.
- A few days before the painting session, remind participants to wear clothes appropriate for painting.
- Prep room for painting prior to artist arrival for set up. Plan where the oil paintings will be stored as they dry.
- When participants arrive, collect photo releases, releases to use digital art, and loan agreements to display their artwork.
- Oil paintings will need to dry for 2-4 weeks before they can be hung.
- Develop museum exhibit. A large digital photo frame can be used to provide a slideshow of digital images. Note that space images have low resolution and do not print out well. It is better to leave them in a digital format for display. Each oil painting should be hung with title and artist name.

**Facilitation guide**
- Note that during the first MicroObservatory session, participants learn about the ground-based telescopes and how to control them remotely to take space images. It takes a day or two for the photographs to be taken and sent via email to the participant.
The second session shows how MicroObservatory tools can be used to colorize/analyze images that were taken during the interim (as well as archived NASA images).

- Note that it was difficult to get the same participants back to the museum for all three sessions. If you combine the two MicroObservatory sessions into one half-day session, you will need to allow time for them to practice their skills while they are still onsite. Also, note that the participants will not receive their real photograph images immediately during the class. If they move on to “Analyzing Images” during the same session, they will need to use NASA’s archived images on the site and then apply the same techniques to their images once they are received.

- Note that links to online tutorials are available at microobservatory.org if participants need to review skills or try advanced skills on their own at home.

- **Volunteer guide**
  - Volunteers can be of assistance in setting up the rooms for each of the sessions. They also can take photographs and make sure all photo releases are collected at each session.

- **Exhibit design**
  - Print the program title, steps, goals, etc. on slides and have them printed on canvas to match the paintings as much as possible. From all the exhibit panels with the same frames as the artist’s sample oil painting. Provide frames for participant work as well, if feasible.
  - Use a large digital frame to display the participants’ digital artwork in a rotating slide show.

- **Promotional graphics and draft exhibition graphics are attached.**