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Army Educational Outreach Program

Undergraduate Research Apprenticeship Program (HSAP)



2017 Annual Program Evaluation Report

PART 3: Appendices

February 2018



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3 | Appendix A – FY17 HSAP Evaluation Plan

Questionnaires

Per the FY16 Army Education Outreach Program (AEOP) Annual Program Plan (APP), Purdue University will conduct an evaluation study of the Undergraduate Research Apprenticeship Program (HSAP) that includes two post-program questionnaires:

1. AEOP Participant Questionnaire to be completed by student participants of the HSAP program at all university sites; and
2. AEOP Mentor Questionnaire to be completed by HSAP mentors (typically a University Scientist or Engineer), and/or others who support students as they participate in the HSAP program.

Questionnaires are the primary method of data collection for AEOP evaluation and collect information about participants' experiences with and perceptions of program resources, structures, and activities; potential benefits to participants; and strengths and areas of improvement for programs.

From FY15 to FY16, questionnaire assessments have been revised and shorted while maintaining alignment with:

- Army's strategic plan and AEOP Priorities 1 (STEM Literate Citizenry), 2 (STEM Savvy Educators) and 3 (Sustainable Infrastructure);
- Federal guidance for evaluation of Federal STEM investments (e.g., implementation and outcomes evaluation, outcomes evaluation of STEM-specific competencies, transferrable competencies, identifying with STEM, intentions to engage in STEM-related activities, and educational/career pathways);
- Best practices and published assessment tools in STEM education, informal STEM education, STEM outreach, and evaluation research communities;
- AEOP's vision to improve the quality of the data collected, focusing on changes in intended student outcomes and contributions of AEOPs like HSAP effecting those changes.

Deployment of common questionnaires with items that are appropriate for all AEOP programs allows evaluators to compare findings across AEOPs and, if administered in successive years, to establish longitudinal studies of student outcomes through the pipeline of AEOP programming. Questionnaires incorporate batteries of items from established assessments that have been validated in published research making external comparisons possible.

All AEOPs are expected to administer a Participant and a Mentor questionnaire provided to them by Purdue University. AEOP-wide Participant and Mentor questionnaires have two versions each; an "advanced" version (for JSHS and apprenticeship programs) and a "basic" version (for GEMS, JSS, and UNITE). Similar item sets are used in both versions, with slight modifications to item wording or the number of items used to accommodate the needs of participants from each individual program. Additionally, program-specific questionnaires have been customized to gather information about programmatic structures, resources, and activities that are unique to each AEOP.

Telephone Interviews

Per the FY16 Army Education Outreach Program (AEOP) Annual Program Plan (APP), Purdue University will conduct an evaluation study of HSAP that includes telephone interviews with HSAP mentors and apprentices.

Interviews provide the evaluation team first-hand opportunities to speak with participant and adult HSAP participants. The contextual information gleaned from these interviews help evaluators understand the nuance of the evaluation data collected from questionnaires, adding depth to evaluative findings. Purdue University's interview assessment efforts focus on program successes and attempt to inform useful program changes so that HSAP can improve in the future.

Evaluation activities during Purdue University's Phone Interview

- 8 – 12 one-on-one phone interviews with HSAP apprentices (approx. 15-20 min. each);
- 8 – 12 one-on-one phone interviews with HSAP mentors (approx. 15-20 min each);

Selecting Interview Participants

Purdue University will purposefully sample from HSAP participants using CVENT enrollment data (site name, apprentice/mentor participant names, gender, & race/ethnicity). The IPA and Purdue University will “invite” selected participants that comprise the desired sample to participate via email through the CVENT portal. Participants will each RSVP prior to the scheduled interview date so that an alternate may be identified if needed.

Purposeful sampling is an attempt to assemble a sample of participants that are likely to provide information about the full range of experiences possible in HSAP. The interview sample will be selected using the following information:

- Gender
- Grade level
- Racial/ethnic group
- Socio-economic status indicators (e.g., qualification for free or reduced-price lunches)

Scheduling and Technology

Purdue University will establish dates and times for each interview that accommodate the program activities for each site. The majority of these dates will occur in mid to late July – the purpose of which is to speak with participants after they have experienced the majority of experiences available in their HSAP program. Purdue University will attempt to convene interviews between 10 a.m. and 2 p.m. in each site's time zone to minimize disruption to the program.

A simple telephone will be used to conduct each interview. Evaluators at Purdue University will also use a recording device to record the interview. All recordings are used for note-taking and transcription purposes only. After transcription, audio files will be destroyed.

Obtaining Informed Assent/Consent: Prior to the Interview

Apprentice and mentor participants should be informed of the evaluation interview *before* it is conducted. This ensures that individuals do not feel pressured to participate. It would be ideal if Purdue University, the IPA, and/or site coordinators work together to invite apprentices and mentors to participate and provide them with evaluation policy forms:

- Attach the Purdue University evaluation policy for HSAP to the email
 - “AEOP Evaluation Policy(Parents).pdf”
 - “AEOP Evaluation Policy(Participants).pdf”
- Purdue University evaluators provide participants with a copy of the evaluation policy and will obtain verbal informed consent from participants just prior to conducting the focus group or interview.
Focus groups and interviews will be audio-recorded for transcription later.

Data Analyses

Quantitative and qualitative data were compiled and analyzed after all data collection concluded. Evaluators summarized quantitative data with descriptive statistics such as numbers of respondents, frequencies and proportions of responses, average response when responses categories are assigned to a 6-point scale (e.g., 1 = “Strongly Disagree” to 6 = “Strongly Agree”), and standard deviations. Emergent coding was used for the qualitative data to identify the most common themes in responses.

Evaluators conducted inferential statistics to study any differences among participant groups (e.g., by gender or race/ethnicity) that could indicate inequities in the SEAP program. Statistical significance indicates whether a result is unlikely to be due to chance alone. Statistical significance was determined with t-tests, chi-square tests, and various non-parametric tests as appropriate, with significance defined at $p < 0.05$. Because statistical significance is sensitive to the number of respondents, it is more difficult to detect significant changes with small numbers of respondents. Practical significance, also known as effect size, indicates the magnitude of an effect, and is typically reported when differences are statistically significant. The formula for effect sizes depends on the type of statistical test used, and is specified, along with generally accepted rules of thumb for interpretation, in the body of the report.

4 | Appendix B – Apprentice Focus Group Protocol

Facilitator: My name is [evaluator] and I'd like to thank you for meeting with us today! We are really excited to learn more about your experiences in HSAP. In case you have not been in an evaluation interview before, I'd like to give you some ground rules that I like to use in interviews. They seem to help the interview move forward and make everyone a little more comfortable:

1. What is shared in the interview stays in the room.
2. It is important for us to hear the positive and negative sides of all issues.
3. Only one person speaks at a time.
4. This is voluntary - you may choose not to answer any question, or stop participating at any time.
5. We will be audio recording the session for note-taking purposes only. Audio will be destroyed.
6. Do you have any questions before we begin?

Key Questions

1. Why did you choose to participate in HSAP this year?

- How did you hear about HSAP?
- Who did you hear about it from?

The Army Educational Outreach Program (AEOP) is a primary sponsor of HSAP. We do these interviews to help the AEOP create reports and defend funding for the program. They need specific information to defend the money for the program.

2. We need to understand more about how HSAP is teaching students about STEM career opportunities in the Army and Department of Defense.

- During HSAP, did you learn anything about STEM careers in the Army or Department of Defense?
- How did you learn about them (e.g., field trips, invited speakers, other activities, etc.)?
- Are you interested in pursuing a career in STEM with the Army or Department of Defense?

3. The AEOP sponsors a wide range of national STEM outreach programs other than HSAP. You are definitely eligible to participate in some of these programs and we need to know if you learned about them during HSAP

- During HSAP, did you learn about any of the outreach programs that the AEOP sponsors? (SMART, NDSEG, HSAP, etc.)
- How did you learn about them?
- Do you think that you will try to participate in any of those programs?

4. Tell us about your experiences in HSAP this year.

- What, specifically do you think you got out of participating in HSAP?
- How do your experiences in HSAP compare to your school experiences in STEM?
- What would you say was the biggest benefit you gained from participating in HSAP?

5. Do you have any suggestions for improving HSAP for other students in the future?

6. Last Chance - Have we missed anything? Tell us anything you want us to know that we didn't ask about.

5 | Appendix C – Mentor Focus Group Protocol

Facilitator: My name is [evaluator] and I'd like to thank you for meeting with us today! We are really excited to learn more about your experiences in HSAP. In case you haven't been in a focus group before, I'd like to give you some ground rules that I like to use in focus groups. They seem to help the group move forward and make everyone a little more comfortable:

1. What is shared in the room stays in the room.
2. Only one person speaks at a time.
3. If you disagree please do so respectfully.
4. It is important for us to hear the positive and negative sides of all issues.
5. We will be audio recording the session for note-taking purposes only. Audio will be destroyed.
6. Do you have any questions about participating in the focus group?

1. When you think about HSAP, what kind of value does this program add?

- How do you think students benefit from participating in HSAP?
- Can you think of a particular student or group of students that benefit the most from HSAP?
- How have you benefited from participating in HSAP?

One of the primary sponsors of the HSAP program is the Army Educational Outreach Program (AEOP). The AEOP needs specific information to create reports and defend funding for its outreach programs.

2. We need to understand more about how HSAP is helping students know more about STEM career opportunities in the Department of Defense, especially civilian positions.

- Have you seen any efforts by HSAP to educate participants about the Army, DoD, or careers in the DoD?
- What strategies seem to be the most effective for HSAP students?
- Do you have any suggestions for helping HSAP teach students about careers in the DoD?

The AEOP sponsors a wide range of national STEM outreach programs that these students qualify for.

3. The AEOP needs to know if HSAP is teaching students about the other STEM outreach programs that it sponsors.

- First, are you aware of the other programs offered by the AEOP? (e.g., REAP, CQL, SMART, etc)
- Have you seen any efforts at HSAP to educate adults or students about the other AEOP programs?
- What seems to work the best? The worst?
- Any suggestions for helping the AEOP educate these students about the other programs?

4. The AEOP is trying to make sure that its programs become more effective at reaching adult and youth participants from underserved and underrepresented groups (racial/ethnic groups, low SES, etc.).

- Have you seen any efforts by HSAP to help engage underserved or underrepresented groups of adults and youth?
- What strategies seem to work the best? The worst?
- Any suggestions for helping HSAP reach new populations of adult and youth participants?

5. What suggestions do you have for improving HSAP?

6. Last Chance - Have we missed anything? Tell us anything you want us to know that we didn't ask about.

6 | Appendix D – Apprentice Questionnaire

| | | |
|--|----------------------|--|
| Contact Information | | |
| Please verify the following information: | | |
| *First Name: | <input type="text"/> | |
| *Last Name: | <input type="text"/> | |
| *Email Address: | <input type="text"/> | |
| <i>All fields with an asterisk (*) are required.</i> | | |

| | | |
|--|---|----------------------------|
| *1. Do you agree to participate in this survey? (required)(*Required) | | |
| <i>Select one.</i> | | |
| <input type="radio"/> | Yes, I agree to participate in this survey | (Go to question number 2.) |
| <input type="radio"/> | No, I do not wish to participate in this survey | Go to end of chapter |

| | | |
|--|--|--|
| *4. What is your current grade level in school? (select one)(*Required) | | |
| <i>Select one.</i> | | |
| <input type="radio"/> | College freshman | |
| <input type="radio"/> | College sophomore | |
| <input type="radio"/> | College junior | |
| <input type="radio"/> | College senior | |
| <input type="radio"/> | Graduate program | |
| <input type="radio"/> | Choose not to report | |
| <input type="radio"/> | Other, (specify):: <input type="text"/> | |

*5. At which of the following HSAP sites did you participate? (Select ONE)(*Required)

Select one.

| | |
|-----------------------|---------------------------------------|
| <input type="radio"/> | Adams State University |
| <input type="radio"/> | Arizona State University, Tempe |
| <input type="radio"/> | Auburn University |
| <input type="radio"/> | City University of New York |
| <input type="radio"/> | Clarkson University |
| <input type="radio"/> | Clemson University |
| <input type="radio"/> | Duke University |
| <input type="radio"/> | Florida International University |
| <input type="radio"/> | Harvard University |
| <input type="radio"/> | Howard University |
| <input type="radio"/> | Johns Hopkins University |
| <input type="radio"/> | Louisiana State University |
| <input type="radio"/> | Michigan State University |
| <input type="radio"/> | North Carolina A&T State University |
| <input type="radio"/> | Northwestern University |
| <input type="radio"/> | Oklahoma State University |
| <input type="radio"/> | Portland State University |
| <input type="radio"/> | Purdue University |
| <input type="radio"/> | Rutgers University |
| <input type="radio"/> | San Jose State University |
| <input type="radio"/> | Savannah State University |
| <input type="radio"/> | St. John's University, New York |
| <input type="radio"/> | Stony Brook University |
| <input type="radio"/> | Texas State University |
| <input type="radio"/> | Tufts University |
| <input type="radio"/> | University of Alabama |
| <input type="radio"/> | University of Arizona |
| <input type="radio"/> | University of California, Berkeley |
| <input type="radio"/> | University of California, Los Angeles |
| <input type="radio"/> | University of California, Merced |
| <input type="radio"/> | University of Central Florida |

| | |
|-----------------------|--|
| <input type="radio"/> | University of Colorado |
| <input type="radio"/> | University of Houston |
| <input type="radio"/> | University of Houston, Downtown |
| <input type="radio"/> | University of Houston, Victoria |
| <input type="radio"/> | University of Kansas Center for Research |
| <input type="radio"/> | University of Maryland, College Park |
| <input type="radio"/> | University of Massachusetts, Amherst |
| <input type="radio"/> | University of Minnesota |
| <input type="radio"/> | University of New Hampshire |
| <input type="radio"/> | University of North Carolina, Charlotte |
| <input type="radio"/> | University of Notre Dame |
| <input type="radio"/> | University of Pennsylvania |
| <input type="radio"/> | University of Rochester |
| <input type="radio"/> | University of South Carolina |
| <input type="radio"/> | University of South Florida |
| <input type="radio"/> | University of Texas, Arlington |
| <input type="radio"/> | University of Texas, El Paso |
| <input type="radio"/> | Washington State University |
| <input type="radio"/> | Western Michigan University |
| <input type="radio"/> | Yale University |

*6. How often did you do each of the following in STEM classes at school over the past year?(*Required)

Select one per row.

| | <i>Not at all</i> | <i>At least once</i> | <i>Monthly</i> | <i>Weekly</i> | <i>Every day</i> |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| *Work with a STEM researcher or company on a real world STEM research project | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Work with a STEM researcher on a research project of your own choosing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Design my own research or investigation based on my own question(s) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Present my STEM research to a panel of judges from industry or the military | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Interact with STEM researchers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Use laboratory procedures and tools | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identify questions or problems to investigate | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Design and carry out an investigation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Analyze data or information and draw conclusions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Work collaboratively as part of a team | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Build or make a computer model | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Solve real world problems | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*7. How often did you do each of the following in your Apprenticeship program this year?(*Required)

Select one per row.

| | <i>Not at all</i> | <i>At least once</i> | <i>Monthly</i> | <i>Weekly</i> | <i>Every day</i> |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| *Work with a STEM researcher or company on a real world STEM research project | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Work with a STEM researcher on a research project of your own choosing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Design my own research or investigation based on my own question(s) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Present my STEM research to a panel of judges from industry or the military | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Interact with STEM researchers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Use laboratory procedures and tools | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identify questions or problems to investigate | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Design and carry out an investigation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Analyze data or information and draw conclusions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Work collaboratively as part of a team | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Build or make a computer model | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Solve real world problems | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*8. How much did each of the following resources help you learn about Army Educational Outreach Programs (AEOPs)?(*Required)

Select one per row.

| | <i>Did not experience</i> | <i>Not at all</i> | <i>A little</i> | <i>Somewhat</i> | <i>Very much</i> |
|---|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| *Army Educational Outreach Program (AEOP) website | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *AEOP on Facebook, Twitter, Pinterest or other social media | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *AEOP brochure | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *My Apprenticeship Mentor | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Presentations or information shared through the Apprenticeship Program | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Participation in the Apprenticeship Program | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*9. How much did each of the following resources help you learn about STEM careers in the Army or Department of Defense (DoD)?(*Required)

Select one per row.

| | <i>Did not experience</i> | <i>Not at all</i> | <i>A little</i> | <i>Somewhat</i> | <i>Very much</i> |
|--|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| *Army Educational Outreach Program (AEOP) website | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *AEOP on Facebook, Twitter, Pinterest or other social media | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Army Research Office (ARO) website | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *AEOP brochure | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *My Apprenticeship Program mentor | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Presentations or information shared in the Apprenticeship Program | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Participation in the Apprenticeship Program | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*10. How SATISFIED were you with the following Apprenticeship Program features?(*Required)

Select one per row.

| | <i>Did not experience</i> | <i>Not at all</i> | <i>A little</i> | <i>Somewhat</i> | <i>Very much</i> |
|--|-------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| *Applying or registering for the program | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Other administrative tasks (in-processing, network access, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Communicating with your host site organizers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *The physical location(s) of Apprenticeship Program activities | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *The variety of STEM topics available to you in the Apprenticeship Program | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Teaching or mentoring provided during Apprenticeship Program activities | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Amount of stipend (payment) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Timeliness of payment (stipend) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Research abstract preparation requirements | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*11. How much input did you have in selecting your Apprenticeship Program research project?(*Required)

Select one.

- | | |
|-----------------------|--|
| <input type="radio"/> | I did not have a project |
| <input type="radio"/> | I was assigned a project by my mentor |
| <input type="radio"/> | I worked with my mentor to design a project |
| <input type="radio"/> | I had a choice among various projects suggested by my mentor |
| <input type="radio"/> | I worked with my mentor and members of a research team to design a project |
| <input type="radio"/> | I designed the entire project on my own |

*12. How often was your mentor available to you during the Apprenticeship Program?(*Required)

Select one.

- | | |
|-----------------------|---|
| <input type="radio"/> | I did not have a mentor |
| <input type="radio"/> | The mentor was never available |
| <input type="radio"/> | The mentor was available less than half of the time |
| <input type="radio"/> | The mentor was available about half of the time of my project |
| <input type="radio"/> | The mentor was available more than half of the time |
| <input type="radio"/> | The mentor was always available |

*13. To what extent did you work as part of a group or team during the Apprenticeship Program?(*Required)

Select one.

- | | |
|-----------------------|--|
| <input type="radio"/> | I worked alone (or alone with my research mentor) |
| <input type="radio"/> | I worked with others in a shared laboratory or other space, but we work on different projects |
| <input type="radio"/> | I worked alone on my project and I met with others regularly for general reporting or discussion |
| <input type="radio"/> | I worked alone on a project that was closely connected with projects of others in my group |
| <input type="radio"/> | I work with a group who all worked on the same project |

*14. How SATISFIED were you with each of the following: (*Required)

Select one per row.

| | <i>Did not experience</i> | <i>Not at all</i> | <i>A little</i> | <i>Somewhat</i> | <i>Very much</i> |
|--|-------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| *My working relationship with my mentor | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *My working relationship with the group or team | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *The amount of time I spent doing meaningful research | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *The amount of time I spent with my research mentor | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *The research experience overall | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*15. The list below includes effective teaching and mentoring strategies. From the list, please indicate which strategies that your mentor(s) used when working with you in the Apprenticeship Program: (*Required)

Select one per row.

| | <i>Yes - my mentor used this strategy with me</i> | <i>No - my mentor did not use this strategy with me</i> |
|--|---|---|
| *Helped me become aware of STEM in my everyday life | <input type="radio"/> | <input type="radio"/> |
| *Helped me understand how I can use STEM to improve my community | <input type="radio"/> | <input type="radio"/> |
| *Used a variety of strategies to help me learn | <input type="radio"/> | <input type="radio"/> |
| *Gave me extra support when I needed it | <input type="radio"/> | <input type="radio"/> |
| *Encouraged me to share ideas with others who have different backgrounds or viewpoints than I do | <input type="radio"/> | <input type="radio"/> |
| *Allowed me to work on a team project or activity | <input type="radio"/> | <input type="radio"/> |
| *Helped me learn or practice a variety of STEM skills | <input type="radio"/> | <input type="radio"/> |
| *Gave me feedback to help me improve in STEM | <input type="radio"/> | <input type="radio"/> |
| *Talked to me about the education I need for a STEM career | <input type="radio"/> | <input type="radio"/> |
| *Recommended Army Educational Outreach Programs that match my interests | <input type="radio"/> | <input type="radio"/> |
| *Discussed STEM careers with the DoD or government | <input type="radio"/> | <input type="radio"/> |

*16. Which of the following statements apply to your research experience in the Apprenticeship Program?
(Choose ALL that apply)(*Required)

Select all that apply.

| | |
|--------------------------|---|
| <input type="checkbox"/> | I presented a talk or poster to other students or faculty |
| <input type="checkbox"/> | I presented a talk or poster at a professional symposium or conference |
| <input type="checkbox"/> | I attended a symposium or conference |
| <input type="checkbox"/> | I wrote or co-wrote a paper that was/will be published in a research journal |
| <input type="checkbox"/> | I wrote or co-wrote a technical paper or patent |
| <input type="checkbox"/> | I will present a talk or poster to other students or faculty |
| <input type="checkbox"/> | I will present a talk or poster at a professional symposium or conference |
| <input type="checkbox"/> | I will attend a symposium or conference |
| <input type="checkbox"/> | I will write or co-write a paper that was/will be published in a research journal |
| <input type="checkbox"/> | I will write or co-write a technical paper or patent |
| <input type="checkbox"/> | I won an award or scholarship based on my research |

*17. As a result of your apprenticeship experience, how much did you GAIN in the following areas?(*Required)

Select one per row.

| | <i>No gain</i> | <i>Small gain</i> | <i>Medium gain</i> | <i>Large gain</i> |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| *In depth knowledge of a STEM topic(s) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Knowledge of research conducted in a STEM topic or field | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Knowledge of research processes, ethics, and rules for conduct in STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Knowledge of how scientists and engineers work on real problems in STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Knowledge of what everyday research work is like in STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*18. Which category best describes the focus of your apprenticeship activities?(*Required)

Select one.

| | |
|-----------------------|-------------|
| <input type="radio"/> | Science |
| <input type="radio"/> | Technology |
| <input type="radio"/> | Engineering |
| <input type="radio"/> | Mathematics |

*19. As a result of your apprenticeship experience, how much did you GAIN in your ability to do each of the following?(*Required)

Select one per row.

If answered, go to question number 21.

| | <i>No gain</i> | <i>Small gain</i> | <i>Medium gain</i> | <i>Large gain</i> |
|---|-----------------------|-----------------------|------------------------|-----------------------|
| *Asking a question that can be answered with one or more scientific experiments | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Using knowledge and creativity to suggest a testable explanation (hypothesis) for an observation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Considering different interpretations of data when deciding how the data answer a question | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Supporting an explanation for an observation with data from experiments | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Supporting an explanation with relevant scientific, mathematical, and/or engineering knowledge | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the strengths and limitations of explanations in terms of how well they describe or predict observations | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Defending an argument that conveys how an explanation best describes an observation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the strengths and limitations of data, interpretations, or arguments presented in technical or scientific texts | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Integrating information from technical or scientific texts and other media to support your explanation of an observation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Communicating about your experiments and explanations in different ways (through talking, writing, graphics, or mathematics) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*20. As a result of your apprenticeship experience, how much did you GAIN in your ability to do each of the following?(*Required)

Select one per row.

| | <i>No gain</i> | <i>Small gain</i> | <i>Medium gain</i> | <i>Large gain</i> |
|--|-----------------------|-----------------------|------------------------|-----------------------|
| *Defining a problem that can be solved by developing a new or improved object, process, or system | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Using knowledge and creativity to propose a testable solution for a problem | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Making a model of an object or system to show its parts and how they work | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Designing procedures for an experiment that are appropriate for the question to be answered | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the limitations of the methods and tools used for data collection | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Carrying out procedures for an experiment and recording data accurately | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Using computer models of an object or system to investigate cause and effect relationships | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Considering different interpretations of the data when deciding if a solution works as intended | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Organizing data in charts or graphs to find patterns and relationships | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Supporting a solution for a problem with data from experiments | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Supporting a solution with relevant scientific, mathematical, and/or engineering knowledge | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the strengths and limitations of solutions in terms of how well they meet design criteria | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Defend an argument that conveys how a solution best meets design criteria | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the strengths and limitations of data, interpretations, or arguments presented in technical or scientific texts | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Integrating information from technical or scientific texts and other media to support your solution to a problem | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Communicating information about your design experiments and solutions in different ways (through talking, writing, graphics, or math equations) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*21. As a result of your apprenticeship experience, how much did you GAIN in each of the skills/abilities listed below?(*Required)

Select one per row.

| | <i>No gain</i> | <i>Small gain</i> | <i>Medium gain</i> | <i>Large gain</i> |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| *Learning to work independently | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Setting goals and reflecting on performance | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Sticking with a task until it is finished | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Making changes when things do not go as planned | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Working well with people from all backgrounds | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Including others' perspectives when making decisions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Communicating effectively with others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Viewing failure as an opportunity to learn | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*22. As a result of your apprenticeship experience, how much did you GAIN in the following areas?(*Required)

Select one per row.

| | <i>No gain</i> | <i>Small gain</i> | <i>Medium gain</i> | <i>Large gain</i> |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| *Interest in a new STEM topic | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Deciding on a path to pursue a STEM career | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Sense of accomplishing something in STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Feeling prepared for more challenging STEM activities | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Confidence to try out new ideas or procedures on my own in a STEM project | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Patience for the slow pace of STEM research | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Desire to build relationships with mentors who work in STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Connecting a STEM topic or field to my personal values | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*23. AS A RESULT OF YOUR APPRENTICESHIP experience, are you MORE or LESS likely to engage in the following activities in science, technology, engineering, or mathematics (STEM) outside of school requirements or activities?(*Required)

Select one per row.

| | <i>Much less likely</i> | <i>Less likely</i> | <i>About the same before and after</i> | <i>More likely</i> | <i>Much more likely</i> |
|---|-----------------------------|------------------------|--|------------------------|---------------------------------|
| *Watch or read non-fiction STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Tinker (play) with a mechanical or electrical device | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Work on solving mathematical or scientific puzzles | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Use a computer to design or program something | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Talk with friends or family about STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Mentor or teach other students about STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Help with a community service project related to STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Participate in a STEM camp, club, or competition | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Take an elective (not required) STEM class | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Work on a STEM project or experiment in a university or professional setting | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*24. After you have participated in your Apprenticeship Program, how far do you want to go in school?(*Required)

Select one.

- | | |
|-----------------------|--|
| <input type="radio"/> | Go to a trade or vocational school |
| <input type="radio"/> | Go to college for a little while |
| <input type="radio"/> | Finish college (get a Bachelor's degree) |
| <input type="radio"/> | Get more education after college |
| <input type="radio"/> | Get a master's degree |
| <input type="radio"/> | Get a Ph.D. |
| <input type="radio"/> | Get a medical-related degree (M.D.), veterinary degree (D.V.M), or dental degree (D.D.S) |
| <input type="radio"/> | Get a combined M.D. / Ph.D. |
| <input type="radio"/> | Get another professional degree (law, business, etc.) |

*25. How interested are you in participating in the following programs in the future?(*Required)

Select one per row.

| | <i>I've never heard of this program</i> | <i>Not at all</i> | <i>A little</i> | <i>Somewhat</i> | <i>Very much</i> |
|---|---|-----------------------|-----------------------|-----------------------|-----------------------|
| *College - College Qualified Leaders (CQL) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *College - Undergraduate Research Apprenticeship Program (HSAP) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *College - Science Mathematics, and Research for Transformation (SMART) College Scholarship | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *College - National Defense Science & Engineering Graduate (NDSEG) Fellowship | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *High School and College - GEMS Near Peer Mentor Program | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*26. How many jobs/careers in STEM did you learn about in your Apprenticeship Program?(*Required)

Select one.

| | |
|-----------------------|-----------|
| <input type="radio"/> | None |
| <input type="radio"/> | 1 |
| <input type="radio"/> | 2 |
| <input type="radio"/> | 3 |
| <input type="radio"/> | 4 |
| <input type="radio"/> | 5 or more |

*27. How many Army or Department of Defense (DoD) STEM jobs/careers did you learn about in your Apprenticeship Program?(*Required)

Select one.

| | |
|-----------------------|-----------|
| <input type="radio"/> | None |
| <input type="radio"/> | 1 |
| <input type="radio"/> | 2 |
| <input type="radio"/> | 3 |
| <input type="radio"/> | 4 |
| <input type="radio"/> | 5 or more |

*28. How much do you agree or disagree with the following statements about Department of Defense (DoD) researchers and research: (*Required)

Select one per row.

| | <i>Strongly Disagree</i> | <i>Disagree</i> | <i>Neither Agree nor Disagree</i> | <i>Agree</i> | <i>Strongly Agree</i> |
|---|--------------------------|-----------------------|-----------------------------------|-----------------------|-----------------------|
| *DoD researchers advance science and engineering fields | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *DoD researchers develop new, cutting edge technologies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *DoD researchers solve real-world problems | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *DoD research is valuable to society | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*29. Which of the following statements describe you after participating in the Apprenticeship Program?(*Required)

Select one per row.

| | <i>Disagree - This did not happen</i> | <i>Disagree - This happened but not because of HSAP</i> | <i>Agree - HSAP contributed</i> | <i>Agree - HSAP was primary reason</i> |
|--|---|---|-------------------------------------|--|
| *I am more confident in my STEM knowledge, skills, and abilities | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *I am more interested in participating in STEM activities outside of school requirements | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *I am more aware of other AEOPs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *I am more interested in participating in other AEOPs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *I am more interested in taking STEM classes in school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *I am more interested in earning a STEM degree | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *I am more interested in pursuing a career in STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *I am more aware of Army or DoD STEM research and careers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *I have a greater appreciation of Army or DoD STEM research | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *I am more interested in pursuing a STEM career with the Army or DoD | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*30. What are the three most important ways that the Apprenticeship Program has helped you?(*Required)

| | | |
|--|--------------|----------------------|
| | *Benefit #1: | <input type="text"/> |
| | *Benefit #2: | <input type="text"/> |
| | *Benefit #3: | <input type="text"/> |

*31. What are the three ways that the Apprenticeship Program should be improved for future participants?(*Required)

| | | |
|--|------------------|----------------------|
| | *Improvement #1: | <input type="text"/> |
| | *Improvement #2: | <input type="text"/> |
| | *Improvement #3: | <input type="text"/> |

32. Please tell us about your overall satisfaction with your Apprenticeship Program experience.

| |
|--|
| |
| |
| |
| |
| |



7 | Appendix E – Mentor Questionnaire

| | | |
|--|----------------------|--|
| Contact Information | | |
| Please verify the following information: | | |
| *First Name: | <input type="text"/> | |
| *Last Name: | <input type="text"/> | |
| *Email Address: | <input type="text"/> | |
| <i>All fields with an asterisk (*) are required.</i> | | |

| | |
|--|---|
| *1. Do you agree to participate in this survey? (required)(*Required) | |
| <i>Select one.</i> | |
| <input type="radio"/> | Yes, I agree to participate in this survey |
| <input type="radio"/> | No, I do not wish to participate in this survey |

| | |
|--|----------------------|
| *4. What is your gender?(*Required) | |
| <i>Select one.</i> | |
| <input type="radio"/> | Male |
| <input type="radio"/> | Female |
| <input type="radio"/> | Choose not to report |

| | |
|---|--|
| *5. What is your race or ethnicity?(*Required) | |
| <i>Select one.</i> | |
| <input type="radio"/> | Hispanic or Latino |
| <input type="radio"/> | Asian |
| <input type="radio"/> | Black or African American |
| <input type="radio"/> | Native American or Alaska Native |
| <input type="radio"/> | Native Hawaiian or Other Pacific Islander |
| <input type="radio"/> | White |
| <input type="radio"/> | Choose not to report |
| <input type="radio"/> | Other race or ethnicity, (specify):: <input type="text"/> |

| | |
|--|--|
| *6. Which of the following BEST describes the organization you work for? (select ONE)(*Required) | |
| <i>Select one.</i> | |
| <input type="radio"/> | No organization |
| <input type="radio"/> | School or district (K-12) |
| <input type="radio"/> | State educational agency |
| <input type="radio"/> | Institution of higher education (vocational school, junior college, college, or university) |
| <input type="radio"/> | Private Industry |
| <input type="radio"/> | Department of Defense or other government agency |
| <input type="radio"/> | Non-profit |
| <input type="radio"/> | Other, (specify): <div style="border: 1px solid black; height: 15px; width: 100%;"></div> |

| | | |
|---|---|-----------------------------|
| *7. Which of the following BEST describes your current occupation (select ONE)(*Required) | | |
| <i>Select one.</i> | | |
| <input type="radio"/> | Teacher | (Go to question number 8.) |
| <input type="radio"/> | Other school staff | (Go to question number 8.) |
| <input type="radio"/> | University educator | (Go to question number 10.) |
| <input type="radio"/> | Scientist, Engineer, or Mathematician in training (undergraduate or graduate student, etc.) | (Go to question number 10.) |
| <input type="radio"/> | Scientist, Engineer, or Mathematics professional | (Go to question number 10.) |
| <input type="radio"/> | Other, (specify):: <div style="border: 1px solid black; height: 15px; width: 100%;"></div> | (Go to question number 10.) |

| | |
|--|------------------|
| *8. What grade level(s) do you teach (select all that apply)?(*Required) | |
| <i>Select all that apply.</i> | |
| <input type="checkbox"/> | Upper elementary |
| <input type="checkbox"/> | Middle school |
| <input type="checkbox"/> | High school |
| <input type="checkbox"/> | N/A |

| | |
|--|---|
| *9. Which of the following subjects do you teach? (select ALL that apply)(*Required) | |
| <i>Select all that apply.</i> | |
| <i>If answered, go to question number 11.</i> | |
| <input type="checkbox"/> | Upper elementary |
| <input type="checkbox"/> | Physical science (physics, chemistry, astronomy, materials science, etc.) |
| <input type="checkbox"/> | Biological science |
| <input type="checkbox"/> | Earth, atmospheric, or oceanic science |
| <input type="checkbox"/> | Environmental science |
| <input type="checkbox"/> | Computer science |
| <input type="checkbox"/> | Technology |
| <input type="checkbox"/> | Engineering |
| <input type="checkbox"/> | Mathematics or statistics |
| <input type="checkbox"/> | Medical, health, or behavioral science |
| <input type="checkbox"/> | Social Science (psychology, sociology, anthropology) |
| <input type="checkbox"/> | Other, (specify):: <input type="text"/> |
| <input type="checkbox"/> | N/A |

| | |
|--|---|
| *10. Which of the following best describes your primary area of research?(*Required) | |
| <i>Select one.</i> | |
| <input type="radio"/> | Physical science (physics, chemistry, astronomy, materials science, etc.) |
| <input type="radio"/> | Biological science |
| <input type="radio"/> | Earth, atmospheric, or oceanic science |
| <input type="radio"/> | Environmental science |
| <input type="radio"/> | Computer science |
| <input type="radio"/> | Technology |
| <input type="radio"/> | Engineering |
| <input type="radio"/> | Mathematics or statistics |
| <input type="radio"/> | Medical, health, or behavioral science |
| <input type="radio"/> | Social Science (psychology, sociology, anthropology) |
| <input type="radio"/> | Other, (specify):: <input type="text"/> |
| <input type="radio"/> | N/A |

*11. At which of the following HSAP sites did you participate? (Select ONE)(*Required)

Select one.

| | |
|-----------------------|---|
| <input type="radio"/> | Adams State University |
| <input type="radio"/> | University of Alabama |
| <input type="radio"/> | Arizona State University |
| <input type="radio"/> | Children's Hospital of Philadelphia |
| <input type="radio"/> | City University of New York |
| <input type="radio"/> | Clark Atlanta University |
| <input type="radio"/> | Colorado School of Mines |
| <input type="radio"/> | Duke University |
| <input type="radio"/> | Florida International University |
| <input type="radio"/> | Georgia Regents University - Augusta |
| <input type="radio"/> | Georgia State University |
| <input type="radio"/> | Georgia Tech |
| <input type="radio"/> | Louisiana State University |
| <input type="radio"/> | Michigan State University |
| <input type="radio"/> | North Carolina A&T |
| <input type="radio"/> | North Carolina State University |
| <input type="radio"/> | Oklahoma State University |
| <input type="radio"/> | Purdue University |
| <input type="radio"/> | Rutgers, the State University of New Jersey (Camden Campus) |
| <input type="radio"/> | Savannah State University |
| <input type="radio"/> | Stonybrook University of New York |
| <input type="radio"/> | Texas State University |
| <input type="radio"/> | N/A |

*12. Which of the following BEST describes your role during HSAP?(*Required)

Select one.

| | |
|-----------------------|---|
| <input type="radio"/> | Research Mentor |
| <input type="radio"/> | Research Team Member but not a Principal Investigator (PI) |
| <input type="radio"/> | Other, (specify):: <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |

13. How many HSAP students did you mentor this year?

students.

*14. How did you learn about HSAP? (Check all that apply)(*Required)

Select all that apply.

| | |
|--------------------------|--|
| <input type="checkbox"/> | Army Research Office (ARO) website |
| <input type="checkbox"/> | Academy of Applied Science (AAS) |
| <input type="checkbox"/> | Army Educational Outreach Program (AEOP) website |
| <input type="checkbox"/> | AEOP on Facebook, Twitter, Pinterest, or other social media |
| <input type="checkbox"/> | A STEM conference or STEM education conference |
| <input type="checkbox"/> | An email or newsletter from school, university, or a professional organization |
| <input type="checkbox"/> | Past HSAP participant |
| <input type="checkbox"/> | A student |
| <input type="checkbox"/> | A colleague |
| <input type="checkbox"/> | My supervisor or superior |
| <input type="checkbox"/> | A HSAP site host or director |
| <input type="checkbox"/> | Workplace communications |
| <input type="checkbox"/> | Someone who works with the Department of Defense (Army, Navy, Air Force) |
| <input type="checkbox"/> | Other, (specify): <input type="text"/> |

*15. How many times have YOU PARTICIPATED in any of the following Army Educational Outreach Programs (AEOPs) in any capacity? If you have heard of an AEOP but never participated select "Never." If you have not heard of an AEOP select "Never heard of it." (*Required)

Select one per row.

| | <i>Never</i> | <i>Once</i> | <i>Twice</i> | <i>Three or more times</i> | <i>I've never heard of this program</i> |
|---|-----------------------|-----------------------|-----------------------|----------------------------|---|
| *Camp Invention | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *eCYBERMISSION | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Junior Solar Sprint (JSS) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Junior Science & Humanities Symposium (JSHS) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Gains in the Education of Mathematics and Science (GEMS) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *GEMS Near Peers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *UNITE | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Science & Engineering Apprenticeship Program (SEAP) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Research & Engineering Apprenticeship Program (REAP) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *High School Apprenticeship Program (HSAP) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *College Qualified Leaders (CQL) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Undergraduate Research Apprenticeship Program (HSAP) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Science Mathematics, and Research for Transformation (SMART) College Scholarship | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *National Defense Science & Engineering Graduate (NDSEG) Fellowship | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*16. Which of the following were used for the purpose of recruiting your student(s) for apprenticeships?
(select ALL that apply)(*Required)

Select all that apply.

| | |
|--------------------------|--|
| <input type="checkbox"/> | Applications from Army Research Office (ARO) or the AEOP |
| <input type="checkbox"/> | Personal acquaintance(s) (friend, family, neighbor, etc.) |
| <input type="checkbox"/> | Colleague(s) in my workplace |
| <input type="checkbox"/> | K-12 school teacher(s) outside of my workplace |
| <input type="checkbox"/> | University faculty outside of my workplace |
| <input type="checkbox"/> | Informational materials sent to K-12 schools or Universities outside of my workplace |
| <input type="checkbox"/> | Communication(s) generated by a K-12 school or teacher (newsletter, email blast, website) |
| <input type="checkbox"/> | Communication(s) generated by a university or faculty (newsletter, email blast, website) |
| <input type="checkbox"/> | STEM or STEM Education conference(s) or event(s) |
| <input type="checkbox"/> | Organization(s) that serve underserved or underrepresented populations |
| <input type="checkbox"/> | The student contacted me (the mentor) about the program |
| <input type="checkbox"/> | I do not know how student(s) were recruited for HSAP |
| <input type="checkbox"/> | Other, (specify):: <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div> |

*17. How SATISFIED were you with the following HSAP features?(*Required)

Select one per row.

| | <i>Did not experience</i> | <i>Not at all</i> | <i>A little</i> | <i>Somewhat</i> | <i>Very much</i> |
|--|-------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| *Application or registration process | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Other administrative tasks (in-processing, network access, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Communicating with Army Research Office (ARO) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Communicating with HSAP organizers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Support for instruction or mentorship during program activities | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Stipends (payment) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Research abstract preparation requirements | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Communicating with Academy of Applied Science (AAS) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*18. The list below describes mentoring strategies that are effective ways to establish the relevance of learning activities for students. From the list below, please indicate which strategies you used when working with your student(s) in HSAP. (*Required)

Select one per row.

| | <i>Yes - I used this strategy</i> | <i>No - I did not use this strategy</i> |
|--|-----------------------------------|---|
| *Become familiar with my student(s) background and interests at the beginning of the HSAP experience | <input type="radio"/> | <input type="radio"/> |
| *Giving students real-life problems to investigate or solve | <input type="radio"/> | <input type="radio"/> |
| *Selecting readings or activities that relate to students' backgrounds | <input type="radio"/> | <input type="radio"/> |
| *Encouraging students to suggest new readings, activities, or projects | <input type="radio"/> | <input type="radio"/> |
| *Helping students become aware of the role(s) that STEM plays in their everyday lives | <input type="radio"/> | <input type="radio"/> |
| *Helping students understand how STEM can help them improve their own community | <input type="radio"/> | <input type="radio"/> |
| *Asking students to relate real-life events or activities to topics covered in HSAP | <input type="radio"/> | <input type="radio"/> |

*19. The list below describes mentoring strategies that are effective ways to support the diverse needs of students as learners. From the list below, please indicate which strategies you used when working with your student(s) in HSAP. (*Required)

Select one per row.

| | <i>Yes - I used this strategy</i> | <i>No - I did not use this strategy</i> |
|---|-----------------------------------|---|
| *Identify the different learning styles that my student (s) may have at the beginning of the HSAP experience | <input type="radio"/> | <input type="radio"/> |
| *Interact with students and other personnel the same way regardless of their background | <input type="radio"/> | <input type="radio"/> |
| *Use a variety of teaching and/or mentoring activities to meet the needs of all students | <input type="radio"/> | <input type="radio"/> |
| *Integrating ideas from education literature to teach/mentor students from groups underrepresented in STEM | <input type="radio"/> | <input type="radio"/> |
| *Providing extra readings, activities, or learning support for students who lack essential background knowledge or skills | <input type="radio"/> | <input type="radio"/> |
| *Directing students to other individuals or programs for additional support as needed | <input type="radio"/> | <input type="radio"/> |
| *Highlighting under-representation of women and racial and ethnic minority populations in STEM and/or their contributions in STEM | <input type="radio"/> | <input type="radio"/> |

*20. The list below describes mentoring strategies that are effective ways to support students development of collaboration and interpersonal skills. From the list below, please indicate which strategies you used when working with your student(s) in HSAP. (*Required)

Select one per row.

| | <i>Yes - I used this strategy</i> | <i>No - I did not use this strategy</i> |
|---|-----------------------------------|---|
| *Having my student(s) tell other people about their backgrounds and interests | <input type="radio"/> | <input type="radio"/> |
| *Having my student(s) explain difficult ideas to others | <input type="radio"/> | <input type="radio"/> |
| *Having my student(s) listen to the ideas of others with an open mind | <input type="radio"/> | <input type="radio"/> |
| *Having my student(s) exchange ideas with others whose backgrounds or viewpoints are different from their own | <input type="radio"/> | <input type="radio"/> |
| *Having my student(s) give and receive constructive feedback with others | <input type="radio"/> | <input type="radio"/> |
| *Having students work on collaborative activities or projects as a member of a team | <input type="radio"/> | <input type="radio"/> |
| *Allowing my student(s) to resolve conflicts and reach agreement within their team | <input type="radio"/> | <input type="radio"/> |

*21. The list below describes mentoring strategies that are effective ways to support students' engagement in "authentic" STEM activities. From the list below, please indicate which strategies you used when working with your student(s) in HSAP. (*Required)

Select one per row.

| | <i>Yes - I used this strategy</i> | <i>No - I did not use this strategy</i> |
|--|-----------------------------------|---|
| *Teaching (or assigning readings) about specific STEM subject matter | <input type="radio"/> | <input type="radio"/> |
| *Having my student(s) search for and review technical research to support their work | <input type="radio"/> | <input type="radio"/> |
| *Demonstrating laboratory/field techniques, procedures, and tools for my student(s) | <input type="radio"/> | <input type="radio"/> |
| *Supervising my student(s) while they practice STEM research skills | <input type="radio"/> | <input type="radio"/> |
| *Providing my student(s) with constructive feedback to improve their STEM competencies | <input type="radio"/> | <input type="radio"/> |
| *Allowing students to work independently to improve their self-management abilities | <input type="radio"/> | <input type="radio"/> |
| *Encouraging students to learn collaboratively (team projects, team meetings, journal clubs, etc.) | <input type="radio"/> | <input type="radio"/> |
| *Encouraging students to seek support from other team members | <input type="radio"/> | <input type="radio"/> |

*22. This list describes mentoring strategies that are effective ways to support students' STEM educational and career pathways. The list also includes items that reflect AEOP and Army priorities. From this list, please indicate which strategies you used when working with your student(s) in HSAP. (*Required)

Select one per row.

| | <i>Yes - I used this strategy</i> | <i>No - I did not use this strategy</i> |
|--|-----------------------------------|---|
| *Asking my student(s) about their educational and/or career goals | <input type="radio"/> | <input type="radio"/> |
| *Recommending extracurricular programs that align with students' goals | <input type="radio"/> | <input type="radio"/> |
| *Recommending Army Educational Outreach Programs that align with students' goals | <input type="radio"/> | <input type="radio"/> |
| *Providing guidance about educational pathways that will prepare my student(s) for a STEM career | <input type="radio"/> | <input type="radio"/> |
| *Discussing STEM career opportunities within the DoD or other government agencies | <input type="radio"/> | <input type="radio"/> |
| *Discussing STEM career opportunities in private industry or academia | <input type="radio"/> | <input type="radio"/> |
| *Discussing the economic, political, ethical, and/or social context of a STEM career | <input type="radio"/> | <input type="radio"/> |
| *Recommending student and professional organizations in STEM to my student(s) | <input type="radio"/> | <input type="radio"/> |
| *Helping students build a professional network in a STEM field | <input type="radio"/> | <input type="radio"/> |
| *Helping my student(s) with their resume, application, personal statement, and/or interview preparations | <input type="radio"/> | <input type="radio"/> |

*23. How useful were each of the following in your efforts to expose student(s) to Army Educational Outreach Programs (AEOPs) during HSAP?(*Required)

Select one per row.

| | <i>Did not experience</i> | <i>Not at all</i> | <i>A little</i> | <i>Somewhat</i> | <i>Very much</i> |
|---|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| *Army Research Office (ARO) website | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Army Educational Outreach Program (AEOP) website | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *AEOP on Facebook, Twitter, Pinterest or other social media | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *AEOP brochure | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *HSAP Program administrator or site coordinator | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Invited speakers or “career” events | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Participation in HSAP | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*24. How USEFUL were each of the following in your efforts to expose your student(s) to Department of Defense (DoD) STEM careers during HSAP.(*Required)

Select one per row.

| | <i>Did not experience</i> | <i>Not at all</i> | <i>A little</i> | <i>Somewhat</i> | <i>Very much</i> |
|---|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| *Army Research Office (ARO) website | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Army Educational Outreach Program (AEOP) website | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *AEOP on Facebook, Twitter, Pinterest or other social media | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *AEOP brochure | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *HSAP Program administrator or site coordinator | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Invited speakers or “career” events | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Participation in HSAP | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*25. Which of the following AEOPs did YOU EXPLICITLY DISCUSS with your student(s) during HSAP? (check ALL that apply)(*Required)

Select one per row.

| | <i>Yes - I discussed this program with my student(s)</i> | <i>No - I did not discuss this program with my student(s)</i> |
|---|--|---|
| *College Qualified Leaders (CQL) | <input type="radio"/> | <input type="radio"/> |
| *GEMS Near Peer Mentor Program | <input type="radio"/> | <input type="radio"/> |
| *Science Mathematics, and Research for Transformation (SMART) College Scholarship | <input type="radio"/> | <input type="radio"/> |
| *National Defense Science & Engineering Graduate (NDSEG) Fellowship | <input type="radio"/> | <input type="radio"/> |
| *I discussed AEOP with my student(s) but did not discuss any specific program | <input type="radio"/> | <input type="radio"/> |

*26. How much do you agree or disagree with the following statements about Department of Defense (DoD) researchers and research: (*Required)

Select one per row.

| | <i>Strongly Disagree</i> | <i>Disagree</i> | <i>Neither Agree nor Disagree</i> | <i>Agree</i> | <i>Strongly Agree</i> |
|---|--------------------------|-----------------------|-----------------------------------|-----------------------|-----------------------|
| *DoD researchers advance science and engineering fields | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *DoD researchers develop new, cutting edge technologies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *DoD researchers solve real-world problems | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *DoD research is valuable to society | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*27. How often did YOUR STUDENT(S) have opportunities to do each of the following in HSAP?(*Required)

Select one per row.

| | <i>Not at all</i> | <i>At least once</i> | <i>A few times</i> | <i>Most days</i> | <i>Every day</i> |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| *Work with a STEM researcher or company on a real world STEM research project | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Work with a STEM researcher on a research project of their own choosing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Design their own research investigation based on their own questions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Present their STEM research to a panel of judges from industry or the military | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Interact with STEM researchers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Use laboratory or field techniques, procedures, and tools | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identify questions or problems to investigate | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Design and carry out an investigation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Analyze data or information and draw conclusions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Work collaboratively as part of a team | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Build or make a computer model | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Solve real world problems | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*28. AS A RESULT OF THEIR HSAP EXPERIENCE, how much did your student(s) GAIN in the following areas?(*Required)

Select one per row.

| | <i>No gain</i> | <i>Small gain</i> | <i>Medium gain</i> | <i>Large gain</i> |
|---|-----------------------|-----------------------|------------------------|-----------------------|
| *In depth knowledge of a STEM topic(s) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Knowledge of research conducted in a STEM topic or field | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Knowledge of research processes, ethics, and rules for conduct in STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Knowledge of how professionals work on real problems in STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Knowledge of what everyday research work is like in STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*29. Which category best describes the focus of your student(s) HSAP activities?(*Required)

Select one.

| | | |
|-----------------------|-------------|-----------------------------|
| <input type="radio"/> | Science | (Go to question number 30.) |
| <input type="radio"/> | Technology | (Go to question number 31.) |
| <input type="radio"/> | Engineering | (Go to question number 31.) |
| <input type="radio"/> | Mathematics | (Go to question number 31.) |

*30. AS A RESULT OF THEIR HSAP EXPERIENCE, how much did your student(s) GAIN in their abilities to do each of the following?(*Required)

Select one per row.

If answered, go to question number 32.

| | <i>No gain</i> | <i>Small gain</i> | <i>Medium gain</i> | <i>Large gain</i> |
|---|-----------------------|-----------------------|------------------------|-----------------------|
| *Asking a question that can be answered with one or more scientific experiments | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Using knowledge and creativity to suggest a testable explanation (hypothesis) for an observation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Making a model of an object or system showing its parts and how they work | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Designing procedures for an experiment that are appropriate for the question to be answered | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the limitations of the methods and tools used for data collection | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Carrying out procedures for an experiment and recording data accurately | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Using computer models of objects or systems to test cause and effect relationships | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Organizing data in charts or graphs to find patterns and relationships | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Considering different interpretations of data when deciding how the data answer a question | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Supporting an explanation for an observation with data from experiments | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Supporting an explanation with relevant scientific, mathematical, and/or engineering knowledge | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the strengths and limitations of explanations in terms of how well they describe or predict observations | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Defending an argument that conveys how an explanation best describes an observation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the strengths and limitations of data, interpretations, or arguments presented in technical or scientific texts | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Integrating information from technical or scientific texts and other media to support your explanation of an observation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Communicating about your experiments and explanations in different ways (through talking, writing, graphics, or mathematics) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

***31. AS A RESULT OF THEIR HSAP EXPERIENCE, how much did your student(s) GAIN in their ability to do each of the following?(*Required)**

Select one per row.

| | <i>No gain</i> | <i>Small gain</i> | <i>Medium gain</i> | <i>Large gain</i> |
|--|-----------------------|-----------------------|------------------------|-----------------------|
| *Defining a problem that can be solved by developing a new or improved object, process, or system | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Using knowledge and creativity to propose a testable solution for a problem | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Making a model of an object or system to show its parts and how they work | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Designing procedures for an experiment that are appropriate for the question to be answered | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the limitations of the methods and tools used for data collection | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Carrying out procedures for an experiment and recording data accurately | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Using computer models of an object or system to investigate cause and effect relationships | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Considering different interpretations of the data when deciding if a solution works as intended | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Organizing data in charts or graphs to find patterns and relationships | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Supporting a solution for a problem with data from experiments | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Supporting a solution with relevant scientific, mathematical, and/or engineering knowledge | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the strengths and limitations of solutions in terms of how well they meet design criteria | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Defend an argument that conveys how a solution best meets design criteria | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Identifying the strengths and limitations of data, interpretations, or arguments presented in technical or scientific texts | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Integrating information from technical or scientific texts and other media to support your solution to a problem | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Communicating information about your design experiments and solutions in different ways (through talking, writing, graphics, or math equations) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*32. AS A RESULT OF THE HSAP EXPERIENCE, how much did your student(s) GAIN (on average) in the skills/abilities listed below?(*Required)

Select one per row.

| | <i>No gain</i> | <i>Small gain</i> | <i>Medium gain</i> | <i>Large gain</i> |
|--|-----------------------|-----------------------|------------------------|-----------------------|
| *Learning to work independently | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Setting goals and reflecting on performance | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Sticking with a task until it is finished | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Making changes when things do not go as planned | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Including others' perspectives when making decisions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Communicating effectively with others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Confidence with new ideas or procedures in a STEM project | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Patience for the slow pace of research | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Desire to build relationships with professionals in a field | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Connecting a topic or field with their personal values | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*33. Which of the following statements describe YOUR STUDENT(S) after participating in the HSAP program?(*Required)

Select one per row.

| | <i>Disagree - This did not happen</i> | <i>Disagree - This happened but not because of HSAP</i> | <i>Agree - HSAP contributed</i> | <i>Agree - HSAP was primary reason</i> |
|---|---------------------------------------|---|---------------------------------|--|
| *More confident in STEM knowledge, skills, and abilities | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *More interested in participating in STEM activities outside of school requirements | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *More aware of other AEOPs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *More interested in participating in other AEOPs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *More interested in taking STEM classes in school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *More interested in earning a STEM degree | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *More interested in pursuing a career in STEM | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *More aware of DoD STEM research and careers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *Greater appreciation of DoD STEM research | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| *More interested in pursuing a STEM career with the DoD | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

34. What are the three most important strengths of HSAP?

| | | |
|--|--------------|----------------------|
| | Strength #1: | <input type="text"/> |
| | Strength #2: | <input type="text"/> |
| | Strength #3: | <input type="text"/> |

35. What are the three ways HSAP should be improved for future participants?

| | | |
|--|-----------------|----------------------|
| | Improvement #1: | <input type="text"/> |
| | Improvement #2: | <input type="text"/> |
| | Improvement #3: | <input type="text"/> |

36. Please tell us about your overall satisfaction with your HSAP experience.

| |
|--|
| |
| |
| |
| |
| |

8 | Appendix E – 21st Century Skills Rubric

*1. Enter the first and last name of your apprentice that you are assessing with this instrument:(*Required)

*2. Please indicate if this is the PRE (first) or POST (second) assessment you are completing for this apprentice:(*Required)

Select all that apply.

| | |
|--------------------------|------|
| <input type="checkbox"/> | Pre |
| <input type="checkbox"/> | Post |

*3. Enter today's date:(*Required)

4. Please rate the Apprentice on this Creativity and Innovation Skill:

Select one per row.

| | <i>Needs improvement - selects one idea without evaluation of others and/or uses existing ideas without imagining new ones</i> | <i>Progressing - develops some original ideas; evaluates ideas, but not thoroughly before selection; shows some imagination in shaping ideas but stays within conventional boundaries</i> | <i>Demonstrates mastery - uses a wide range of idea creation techniques to develop several original ideas; elaborates, refines, analyzes and evaluates own ideas in order to improve and maximize creative efforts</i> | <i>Did not observe</i> |
|-----------------------------|--|---|--|------------------------|
| Ability to think creatively | ○ | ○ | ○ | ○ |

5. Please rate the Apprentice on this Creativity and Innovation Skill:

Select one per row.

| | | | | |
|--|---|--|---|------------------------|
| | <i>Needs improvement - does not ask new questions or elaborate on the selected ideas and/or does not contribute to group discussions and/or distracts from group progress</i> | <i>Progressing - considers and uses some feedback but does not seek it out; asks questions but only makes minor tweaks; contributes to group discussions and activities occasionally</i> | <i>Demonstrates mastery - asks new questions and takes different perspectives to elaborate on ideas; seeks and uses group feedback and critique to revise ideas and formulate new ones; contributes to group discussions frequently; takes initiative to ensure all group members are on task</i> | <i>Did not observe</i> |
| Ability to work creatively with others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

6. Please rate the Apprentice on this Creativity and Innovation Skill:

Select one per row.

| | | | | |
|----------------------------------|---|---|---|------------------------|
| | <i>Needs improvement - shows a lack of originality and/or understanding</i> | <i>Progressing - makes some attempts of relevant originality; solutions demonstrate some understanding and creativity</i> | <i>Demonstrates mastery - implements innovative ideas to make a tangible and meaningful product; attempts creativity multiple times and understands the cyclical process of small successes and frequent mistakes; product/solution displays unique, detailed perspective</i> | <i>Did not observe</i> |
| Ability to implement innovations | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | |
|--|---|--|--|------------------------|
| 7. Please rate the Apprentice on this Critical Thinking and Problem Solving Skill: | | | | |
| Select one per row. | | | | |
| | <i>Needs improvement - does not use reasoning as appropriate to the situation</i> | <i>Progressing - uses one type of reasoning appropriate to the situation</i> | <i>Demonstrates mastery - uses various types of reasoning (inductive, deductive, etc.) as appropriate to the situation</i> | <i>Did not observe</i> |
| Ability to reason effectively | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | |
|--|---|---|---|------------------------|
| 8. Please rate the Apprentice on this Critical Thinking and Problem Solving Skill: | | | | |
| Select one per row. | | | | |
| | <i>Needs improvement - fails to demonstrate how parts of a whole interact with each other</i> | <i>Progressing - inconsistent in analyzing how parts of a whole interact with each other to produce overall outcomes in complex systems</i> | <i>Demonstrates mastery - analyzes how parts of a whole interact with each other to produce overall outcomes in complex systems</i> | <i>Did not observe</i> |
| Ability to use systems thinking | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

9. Please rate the Apprentice on this Critical Thinking and Problem Solving Skill:

Select one per row.

| | <i>Needs improvement - lacks analysis and evaluation of evidence, arguments, claims, and beliefs and/or lacks alternative points of view and/or lacks connections between information and arguments and/or does not interpret information and draw conclusions and/or does not reflect critically on learning experiences and processes</i> | <i>Progressing - limited analysis and evaluation of evidence, arguments, claims, and beliefs; missing key alternative points of view; missing key connections between information and arguments; interprets information and draws conclusions based on inaccurate analysis; limited reflection on the learning experiences and processes</i> | <i>Demonstrates mastery - effectively analyzes and evaluates evidence, arguments, claims, and beliefs; analyzes and evaluates major alternative points of view; synthesizes and makes connections between information and arguments; interprets information and draws conclusions based on the best analysis; reflects critically on learning experiences and processes</i> | <i>Did not observe</i> |
|---|---|--|---|------------------------|
| Ability to make judgments and decisions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

10. Please rate the Apprentice on this Critical Thinking and Problem Solving Skill:

Select one per row.

| | <i>Needs improvement - does not attempt to solve problems and/or does not identify and ask significant questions that clarify various points of view and lead to better solutions</i> | <i>Progressing - attempts to solve different kinds of non-familiar problems; identifies and asks questions occasionally that clarify a point of view and lead to better solutions</i> | <i>Demonstrates mastery - solves different kinds of non-familiar problems in both conventional and innovative ways; identifies and asks significant questions that clarify various points of view and lead to better solutions</i> | <i>Did not observe</i> |
|---------------------------------|---|---|--|----------------------------|
| Ability to solve problems | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

11. Please rate the Apprentice on this Communication, Collaboration, Social and Cross-Cultural Skill:

Select one per row.

| | <i>Needs improvement - does not consistently articulate thoughts and ideas effectively and/or does not listen to others and/or does not consistently communicate with others to instruct, motivate, or persuade and/or utilizes media and technologies in ineffective ways</i> | <i>Progressing - articulates thoughts and ideas occasionally using oral, written and nonverbal communication skills; listens occasionally to decipher meaning, including knowledge, values, attitudes, and intentions; uses communication for some purposes (inform, instruct, motivate, or persuade); utilizes some media and technologies and knows how to judge their effectiveness as well as assess their impact</i> | <i>Demonstrates mastery - articulates thoughts and ideas effectively using oral, written, and nonverbal in a variety of forms and contexts; listens effectively to decipher meaning, including knowledge, values, attitudes and intentions; uses effective communication for a range of purposes (inform, instruct, motivate and persuade); utilizes multiple media and technologies and knows how to judge their effectiveness as well as assess their impact</i> | <i>Did not observe</i> |
|--------------------------------|--|---|--|------------------------|
| Ability to communicate clearly | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

12. Please rate the Apprentice on this Communication, Collaboration, Social and Cross-Cultural Skill:

Select one per row.

| | <i>Needs improvement - does not work effectively and respectfully with others and/or not willing to be flexible and work toward a common goal and/or not willing to be responsible for shared work and/or does not value the individual contributions of others</i> | <i>Progressing - demonstrates ability to work effectively and respectfully with diverse teams; assumes shared responsibility some of the time for collaborative work and values the individual contributions made by each team member</i> | <i>Demonstrates mastery - demonstrates ability to work effectively and respectfully with diverse teams; exercises flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal; assumes shared responsibility for collaborative work and values the individual contributions made by each team member</i> | <i>Did not observe</i> |
|------------------------------------|---|---|--|------------------------|
| Ability to collaborate with others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

13. Please rate the Apprentice on this Communication, Collaboration, Social and Cross-Cultural Skill:

Select one per row.

| | <i>Needs improvement - does not contribute to the group or does not allow others to contribute and/or displays disrespect to other members of the group</i> | <i>Progressing - conducts themselves in respectful, professional manner</i> | <i>Demonstrates mastery - knows when it is appropriate to listen and when to speak; conducts themselves in a respectful, professional manner; leverages social and cultural differences to create new ideas and increase both innovation and quality of work</i> | <i>Did not observe</i> |
|--|---|---|--|----------------------------|
| Ability to interact effectively with others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

14. Please rate the Apprentice on this Information, Media, and Technological Literacy Skill:

Select one per row.

| | <i>Needs improvement - does not use time efficiently (time) and effectively (sources) and/or does not evaluate information</i> | <i>Progressing - does not consistently access information efficiently (time) and effectively (sources); does not consistently evaluate information critically and competently</i> | <i>Demonstrates mastery - accesses information efficiently (time) and effectively (sources); evaluates information critically and competently</i> | <i>Did not observe</i> |
|--|--|---|---|------------------------|
| Ability to access and evaluate information | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

15. Please rate the Apprentice on this Information, Media, and Technological Literacy Skill:

Select one per row.

| | <i>Needs improvement - does not use information to solve the issue or problem at hand and/or does not attempt to use a wide variety of valid and relevant sources and/or does not apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information</i> | <i>Progressing - does not consistently use information accurately for the issue or problem at hand; does not consistently manage the flow of information from a wide variety of valid and relevant sources; does not apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information</i> | <i>Demonstrates mastery - uses information accurately and creatively for the issue or problem at hand; manages the flow of information from a wide variety of valid and relevant sources; applies a fundamental understanding of the ethical/legal issues surrounding the access and use of information</i> | <i>Did not observe</i> |
|---------------------------------------|---|--|---|------------------------|
| Ability to use and manage information | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

16. Please rate the Apprentice on this Information, Media, and Technological Literacy Skill:

Select one per row.

| | <i>Needs improvement - does not understand how media messages are constructed and for what purposes and/or does not examine how individuals interpret messages differently and/or how values and points of view are included or excluded and how media can influence beliefs and behaviors and/or does not apply a fundamental understanding of the ethical/legal issues surrounding the access and use of media</i> | <i>Progressing - does not consistently understand both how and why media messages are constructed and for what purposes; does not consistently examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors; does not apply a fundamental understanding of the ethical/legal issues surrounding the access and use of media</i> | <i>Demonstrates mastery - understands both how and why media messages are constructed and for what purposes; examines how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors; applies a fundamental understanding of the ethical/legal issues surrounding the access and use of media</i> | <i>Did not observe</i> |
|--------------------------|--|--|--|------------------------|
| Ability to analyze media | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

17. Please rate the Apprentice on this Information, Media, and Technological Literacy Skill:

Select one per row.

| | <i>Needs improvement - does not utilize the most appropriate media creation tools, characteristics, and conventions and/or does not understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments</i> | <i>Progressing - does not consistently utilize the most appropriate media creation tools, characteristics, and conventions; does not consistently understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments</i> | <i>Demonstrates mastery - understands and utilizes the most appropriate media creation tools, characteristics, and conventions; understands and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments</i> | <i>Did not observe</i> |
|----------------------------------|---|---|--|------------------------|
| Ability to create media products | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

18. Please rate the Apprentice on this Information, Media, and Technological Literacy Skill:

Select one per row.

| | <i>Needs improvement - does not use technology as a tool to research, organize, evaluate, and communicate information and/or does not use digital technologies (computers, PDAs, media players, etc.) communication/networking tools and social networks appropriately to access, manage, integrate, evaluate, and create information to successfully function in a knowledge community and/or does not apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies</i> | <i>Progressing - does not use technology as a tool consistently to research, organize, evaluate, and communicate information; does not consistently use digital technologies (computers, PDAs, media players, etc.) communication/networking tools and social networks appropriately to access, manage, integrate, evaluate, and create information to successfully function in a knowledge community; does not consistently apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies</i> | <i>Demonstrates mastery - uses technology as a tool to research, organize, evaluate, and communicate information; uses digital technologies (computers, PDAs, media players, etc.) communication/networking tools and social networks appropriately to access, manage, integrate, evaluate, and create information to successfully function in a knowledge community; applies a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies</i> | <i>Did not observe</i> |
|---|--|---|--|------------------------|
| Ability to apply technology effectively | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | |
|---|--|--|--|------------------------|
| 19. Please rate the Apprentice on this Flexibility, Adaptability, Initiative, and Self-Direction Skill: | | | | |
| Select one per row. | | | | |
| | <i>Needs improvement - does not adapt to varied roles, job responsibilities, schedules and contexts and/or does not work effectively in a climate of ambiguity and changing priorities</i> | <i>Progressing - adapts to varied roles, job responsibilities, schedules and contexts OR works effectively in a climate of ambiguity and changing priorities</i> | <i>Demonstrates mastery - adapts to varied roles, job responsibilities, schedules and contexts AND works effectively in a climate of ambiguity and changing priorities</i> | <i>Did not observe</i> |
| Ability to adapt to change | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | |
|---|--|---|--|------------------------|
| 20. Please rate the Apprentice on this Flexibility, Adaptability, Initiative, and Self-Direction Skill: | | | | |
| Select one per row. | | | | |
| | <i>Needs improvement - does not incorporate feedback effectively; does not deal positively with praise, setbacks, or criticism; does not understand, negotiate, and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments</i> | <i>Progressing - incorporates feedback effectively; deals positively with praise, setbacks, and criticism; does not understand, negotiate, and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments</i> | <i>Demonstrates mastery - incorporates feedback effectively; deals positively with praise, setbacks, and criticism; understands, negotiate, and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments</i> | <i>Did not observe</i> |
| Ability to be flexible | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

21. Please rate the Apprentice on this Flexibility, Adaptability, Initiative, and Self-Direction Skill:

Select one per row.

| | | | | |
|----------------------------------|--|--|---|------------------------|
| | <i>Needs improvement - does not set goals with tangible and intangible success criteria; does not balance tactical (short-term) and strategic (long-term) goals; does not utilize time and manage workload effectively</i> | <i>Progressing - does not set goals with tangible and intangible success criteria; does not balance tactical (short-term) and strategic (long-term) goals; utilizes time and manage workload effectively</i> | <i>Demonstrates mastery - sets goals with tangible and intangible success criteria; balances tactical (short-term) and strategic (long-term) goals; utilizes time and manage workload effectively</i> | <i>Did not observe</i> |
| Ability to manage goals and time | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

22. Please rate the Apprentice on this Flexibility, Adaptability, Initiative, and Self-Direction Skill:

Select one per row.

| | | | | |
|-------------------------------|---|--|--|------------------------|
| | <i>Needs improvement - does not monitor, define, or prioritize and does not complete tasks without direct oversight</i> | <i>Progressing - occasionally monitors, defines, prioritizes and completes tasks without direct oversight.</i> | <i>Demonstrates mastery - monitors, defines, prioritizes and completes tasks without direct oversight.</i> | <i>Did not observe</i> |
| Ability to work independently | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

23. Please rate the Apprentice on this Flexibility, Adaptability, Initiative, and Self-Direction Skill:

Select one per row.

| | | | | |
|-------------------------------------|---|--|---|------------------------|
| | <i>Needs improvement - does not go beyond basic mastery of skills and curriculum to explore and expand one's own learning and opportunities; does not demonstrate initiative to advance skill levels toward a professional level; does not demonstrate commitment to learning as a lifelong process; does not reflect critically on past experiences in order to inform future progress</i> | <i>Progressing - goes beyond basic mastery of skills and curriculum to explore and expand one's own learning and opportunities; demonstrates initiative to advance skill levels toward a professional level; does not demonstrate commitment to learning as a lifelong process; does not reflect critically on past experiences in order to inform future progress</i> | <i>Demonstrates mastery - goes beyond basic mastery of skills and curriculum to explore and expand one's own learning and opportunities; demonstrates initiative to advance skill levels toward a professional level; demonstrates commitment to learning as a lifelong process; reflects critically on past experiences in order to inform future progress</i> | <i>Did not observe</i> |
| Ability to be self-directed learner | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

24. Please rate the Apprentice on this Productivity, Accountability, Leadership, and Responsibility Skill:

Select one per row.

| | <i>Needs improvement - does not set appropriate goals; no plan or management strategy is created to achieve the intended result</i> | <i>Progressing - sets goals, but does not complete them in a timely manner; manages work with an incomplete plan to achieve the intended result</i> | <i>Demonstrates mastery - sets and meets goals, even in the face of obstacles and competing pressures; prioritizes, plans and manages work to achieve the intended result</i> | <i>Did not observe</i> |
|----------------------------|---|---|---|------------------------|
| Ability to manage projects | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

25. Please rate the Apprentice on this Productivity, Accountability, Leadership, and Responsibility Skill:

Select one per row.

| | | | | |
|----------------------------|---|---|---|------------------------|
| | <i>Needs improvement - demonstrates less than half of the attributes associated with producing high quality products including abilities to: work positively and ethically; manage time and projects effectively; appropriately multi-task; participate actively; reliable and punctual; present oneself professionally with proper etiquette; collaborate and cooperate effectively with teams; respect and appreciate team diversity; be accountable for results.</i> | <i>Progressing - demonstrates more than half of the attributes associated with producing high quality products including abilities to: work positively and ethically; manage time and projects effectively; appropriately multi-task; participate actively; reliable and punctual; present oneself professionally with proper etiquette; collaborate and cooperate effectively with teams; respect and appreciate team diversity; be accountable for results.</i> | <i>Demonstrates mastery - demonstrates all of the attributes associated with producing high quality products including abilities to: work positively and ethically; manage time and projects effectively; appropriately multi-task; participate actively; reliable and punctual; present oneself professionally with proper etiquette; collaborate and cooperate effectively with teams; respect and appreciate team diversity; be accountable for results.</i> | <i>Did not observe</i> |
| Ability to produce results | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

26. Please rate the Apprentice on this Productivity, Accountability, Leadership, and Responsibility Skill:

Select one per row.

| | <i>Needs improvement - shows no use of interpersonal skills and/or problem solving skills</i> | <i>Progressing - uses interpersonal and problem solving skills to work toward a goal; leverages strengths of others to accomplish a goal</i> | <i>Demonstrates mastery - uses interpersonal and problem solving skills to influence and guide others toward a goal; leverages strengths of others to accomplish a goal; inspires others to reach their very best via example and selflessness; demonstrates integrity and ethical behavior in using influence and power</i> | <i>Did not observe</i> |
|----------------------------------|---|--|--|------------------------|
| Ability to guide and lead others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

27. Please rate the Apprentice on this Productivity, Accountability, Leadership, and Responsibility Skill:

Select one per row.

| | <i>Needs improvement - does not act responsibly on a consistent basis</i> | <i>Progressing - acts responsibly with the interests of the group or project in mind</i> | <i>Demonstrates mastery - acts responsibly with the interests of the larger community in mind</i> | <i>Did not observe</i> |
|-------------------------------------|---|--|---|------------------------|
| Ability to be responsible to others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

9 | AAS/ARO Response to FY17 Evaluation Report

Ongoing efforts are being made to encourage PIs/universities to sponsor an equal mix of HSAP/URAP students in their laboratories. However, due to the nature of research projects, university policy, etc., slightly fewer HSAP students have been placed in apprenticeships. During FY 18 a broader effort will be made to increase the number of universities who are able to support high school students on their campuses by permitting such universities to submit request for more than one HSAP student during proposal submission.

AAS and ARO will work together to recruit to more diverse population by targeting Title I high schools and STEM organizations, in addition to creating best practices for HSAP. Additionally, HSAP will continue to communicate to PIs/Mentors the AEOP priority of growing the diversity pool of STEM talent and encourage them to make efforts to select qualified underrepresented applicants (during their application review process) to participate in the limited number of HSAP opportunities. HSAP has communicated the selection of underserved participants as an AEOP priority to PIs/Mentors during the FY 18 RFP Kickoff email, will communicate the same to the PI/Mentor in the HSAP welcome email and will include as an item in the PI/Mentor best practices document.

In addition to AAS, ARO will work with Widmeyer to make a coordinated effort to drive HSAP participants and mentors to AEOP social media and website. AAS and ARO will continue to ensure that all AEOP promotional material, program information and correspondence is branded with social media and website links/web addresses.

ARO will continue to work with AAS to finalize and distribute a written communication plan to PIs/Mentors in an effort to standardize and improve the delivery of information from the program leadership, program requirements, etc. to the PIs/mentors and site directors. During FY 17 a Meet & Greet was developed and implemented at several universities where students and mentors came together to talk about their experiences and learn about other AEOP programs. We will expand this effort in FY 18 and will include discussion of other AEOP opportunities as an item in the PI/Mentor best practices with roles and responsibilities document. Additionally, HSAP will share available AEOP quick reference programs overview fliers and brochures with PI/Mentors to further facilitate their AEOP discussions with students.