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Army Educational Outreach Program

Junior Solar Sprint (JSS)



2017 Annual Program Evaluation Report

PART 3: Appendices



April 2018



1 | AEOP Consortium Contacts

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3 | Appendix A – FY17 JSS Evaluation Plan

Questionnaires

As per the approved FY17 AEOP APP (continuation of Virginia Tech evaluation plan), the external evaluation of JSS included two post-program questionnaires:

- 1. AEOP Youth Questionnaire to be completed by student participants of the National TSA Conference JSS event and the three local Army-sponsored JSS events; and
- 2. AEOP Mentor Questionnaire to be completed by competition advisors, chaperones, or event organizers who supported students as they prepared for or participated in National TSA Conference JSS event and the three local Army-sponsored JSS events.

Questionnaires were the primary method of data collection for AEOP evaluation and collected 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.

The questionnaires are aligned 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., inclusive of implementation and outcomes evaluation, and outcomes of STEM-specific competencies, transferrable competencies, attitudes about/identifying with STEM, future engagement in STEM-related activities, and educational/career pathways);
- Best practices and published assessment tools in STEM education, STEM informal/outreach, and the 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 CQL effecting those changes.

The use of common questionnaires and sets of items that are appropriate across programs will allow for comparisons across AEOP programs and, if administered in successive years, longitudinal studies of students as they advance through pipelines within the AEOP. Because the questionnaires incorporate batteries of items from existing tools that have been validated in published research, external comparisons may also be possible.

All AEOPs are expected to administer the Youth and Mentor questionnaires provided for their program. Both the Youth and Mentor questionnaires have two versions, an "advanced" version (JSHS and apprenticeship programs) or a "basic" version (all other programs). The same basic set of items are used in both, with slightly modified items and/or additional items used in the advanced version. Additionally, the surveys are customized to gather information specific structures, resources, and activities of programs.



Focus Group Site Visits

The external evaluation of JSS includes site visits/onsite focus groups at the National TSA Conference JSS event.

Site visits provide the evaluation team with first-hand opportunities to speak with students and their mentors. We are able to observe the AEOPs in action. The information gleaned from these visits assists us in illustrating and more deeply understanding the findings of other data collected (from questionnaires). In total, the evaluation findings are used to highlight program successes and inform program changes so that the AEOPs can be even better in the future.

Evaluation Activities during JSS Site Visits:

- One or two 45 minute focus group with 6-8 youth participants;
- One 45-minute focus group with 6-8 mentors;
- 30-60 minutes to observe your program (specifically, to see students engaged in program activities, preferably with their mentors); and
- 10-15 minute transitions between each evaluation activity for moving groups in and out and providing evaluators with time to organize paperwork and take nature breaks.
- Evaluators may also conduct rapid (3-5 minute) interviews with a random sampling of participants.

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"
 - o "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 – Student 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 JSS. 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 JSS this year?

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

The Army Educational Outreach Program (AEOP) is a primary sponsor of JSS. 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 JSS is teaching students about STEM career opportunities in the Army and Department of Defense.
 - o During JSS, 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 JSS. You are definitely eligible to participate in some of these programs and we need to know if you learned about them during JSS.
 - During JSS, 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 JSS this year.
 - What, specifically do you think you got out of participating in JSS?
 - How do your experiences in JSS 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 JSS 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 JSS. 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 JSS, what kind of value does this program add?
 - How do you think students benefit from participating in JSS?
 - Can you think of a particular student or group of students that benefit the most from JSS?
 - How have you benefited from participating in JSS?

One of the primary sponsors of the JSS 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 JSS is helping students know more about STEM career opportunities in the Department of Defense, especially civilian positions.
 - Have you seen any efforts by JSS to educate participants about the Army, DoD, or careers in the DoD?
 - What strategies seem to be the most effective for JSS students?
 - Do you have any suggestions for helping JSS 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 JSS 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)
- o Have you seen any efforts at JSS 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 JSS to help engage underserved or underrepresented groups of adults and youth?
 - What strategies seem to work the best? The worst?
 - \circ Any suggestions for helping JSS reach new populations of adult and youth participants?
- 5. What suggestions do you have for improving JSS?
- 6. Last Chance Have we missed anything? Tell us anything you want us to know that we didn't ask about.





6 | Appendix D – Student Participant Questionnaire



Contact Information	
Please verify the following information:	
*First Name:	
*Last Name:	
*Email Address:	
All fields with an asterisk (*) are required.	

*1. Do you agree to participate in this survey? (required)(*Required)					
Sele	Select one.				
0	O Yes, I agree to participate in this survey				
0	ONo, I do not wish to participate in this surveyGo to end of chapter				

2. What grade will you start in the fall? (select one)		
Select one		
0	4th	
0	5th	
0	6th	
0	7th	
0	8th	
0	9th	
0	Choose not to report	
0	Other, (specify)::	

3. What is your gender?

Select one.



0	Male
0	Female
0	Choose not to report

4. What is your race or ethnicity?			
Select one.			
0	Hispanic or Latino		
0	Asian		
0	Black or African American		
0	Native American or Alaska Native		
0	Native Hawaiian or Other Pacific Islander		
0	White		
0	Choose not to report		
0	Other race or ethnicity, (specify)::		

5. Which best describes the location of your school?		
Select on	е.	
0	Frontier or tribal school	
0	Rural (country)	
0	Suburban	
0	Urban (city)	

6. What kind of school do you attend?	
Select one.	



0	Public school
0	Private school
0	Home school
0	Online school
0	Department of Defense (DoDDS or DoDEA) school
0	I am not sure

7. At which of the following JSS sites did you participate? (Select ONE)

Select one.



0	Alebaura
	Alabama
0	Arizona
0	California
0	Colorado
0	Delaware
0	Florida
0	Georgia
0	Idaho
0	Illinois
0	Kansas
0	Kentucky
0	Louisiana
0	Maryland
0	Mississippi
0	Missouri
0	Montana
0	New Hampshire
0	New Jersey
0	New Mexico
0	New York
0	North Carolina
0	North Dakota
0	Ohio
0	Oklahoma
0	Oregon
0	Pennsylvania
0	Rhode Island
0	South Carolina
0	Tennessee
0	Texas
0	Utah
L	



0	Virginia
0	Washington
0	West Virginia

8. Have you participated in any of the following AEOP programs previously and if so, how many times?					
Select one per row.					
	I have not participated in this program	Once	Twice	Three or more times	
Gains in the Education of Mathematics and Science (GEMS)	0	0	0	0	
Junior Solar Sprint (JSS)	0	0	0	0	
eCybermission	0	0	0	0	
Junior Science & Humanities Symposium (JSHS)	0	0	0	0	
Camp Invention	0	0	0	0	

lect one per row.					
	Not at all	At least once	A few times	Most days	Every day
Learn about science, technology, engineering, or mathematics (STEM) topics that are new to you	0	0	0	0	0
Apply STEM learning to real-life situations	0	0	0	0	0
Learn about new discoveries in STEM	0	0	0	0	0
Learn about different careers that use STEM	0	0	0	0	0
Interact with scientists or engineers	0	0	0	0	0
Communicate with other students about STEM	0	0	0	0	0



Select one per row.							
	Not at all	At least once	A few times	Most days	Every day		
Learn about science, technology, engineering, or mathematics (STEM) topics that are new to you	0	0	0	0	0		
Apply STEM learning to real-life situations	0	0	0	0	0		
Learn about new discoveries in STEM	0	0	0	0	0		
Learn about different careers that use STEM	0	0	0	0	0		
Interact with scientists or engineers	0	0	0	0	0		
Communicate with other students about STEM	0	0	0	0	0		



11. How often did you do each of the following in STEM classes at school?

ect one per row.					
	Not at all	At least once	A few times	Most days	Every day
Use laboratory procedures and tools	0	0	0	0	0
Participate in hands-on STEM activities	0	0	0	0	0
Work as part of a team	0	0	0	0	0
dentify questions or problems to investigate	0	0	0	0	0
Design an investigation or experiment	0	0	0	0	0
Carry out an investigation or experiment	0	0	0	0	0
Examine or analyze data or information	0	0	0	0	0
Come up with conclusions from an investigation or experiment	0	0	0	0	0
Come up with explanations or solutions	0	0	0	0	0
Build or make a computer model	0	0	0	0	0

12. How often did you do each of the following while preparing for and participating in JSS this year?



	Not at all	At least once	A few times	Most days	Every day
Use laboratory procedures and tools	0	0	0	0	0
Participate in hands-on STEM activities	0	0	0	0	0
Work as part of a team	0	0	0	0	0
Identify questions or problems to investigate	0	0	0	0	0
Design an investigation or experiment	0	0	0	0	0
Carry out an investigation or experiment	0	0	0	0	0
Examine or analyze data or information	0	0	0	0	0
Come up with conclusions from an investigation or experiment	0	0	0	0	0
Come up with creative explanations or solutions	0	0	0	0	0
Build or make a computer model	0	0	0	0	0



13. How much did each of the following resources help you learn about JSS and other Army Educational Outreach Programs (AEOPs)?

Select one per row.

	Did not experience	Not at all	A little	Somewhat	Very much
The Technology Student Association (TSA) website	0	0	0	0	0
The Army Educational Outreach Program (AEOP) website	0	0	0	0	0
Facebook, Twitter, Pinterest or other social media	0	0	0	0	0
The AEOP brochure	0	0	0	0	0
My JSS mentor(s)	0	0	0	0	0
Speakers who I heard during JSS	0	0	0	0	0
My participation in JSS	0	0	0	0	0
My teacher	0	0	0	0	0

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



	Did not experience	Not at all	A little	Somewhat	Very much
The Technology Student Association (TSA) website	0	0	0	0	0
The Army Educational Outreach Program (AEOP) website	0	0	0	0	0
Facebook, Twitter, Pinterest or other social media	0	0	0	0	0
The AEOP brochure	0	0	0	0	0
My JSS mentor(s)	0	0	0	0	0
Speakers I heard during JSS	0	0	0	0	0
My participation in JSS	0	0	0	0	0
My teacher	0	0	0	0	0



Select one per row.					
	Did not experience	Not at all	A little	Somewhat	Very much
Applying or registering for the program	0	0	0	0	0
Communicating with the JSS host site organizers	0	0	0	0	0
The location(s) of JSS's competition	0	0	0	0	0
The STEM topics discussed in JSS	0	0	0	0	0
The help my teacher or mentor gave me	0	0	0	0	0
Materials I was given to use (examples: workbooks, online resources, etc.) used during program activities	0	0	0	0	0
Guest speakers	0	0	0	0	0

16. How USEFUL were the following JSS resources provided at the AEOP website?



	Did not use	Not at all	A little	Somewhat	Very much
Official Technology Student Association Competition Rules	0	0	0	0	0
Local Competition Rules	0	0	0	0	0
Build A Car resources	0	0	0	0	0
Course Outline	0	0	0	0	0
STEM Standards	0	0	0	0	0
Lesson Plans	0	0	0	0	0
Terminology	0	0	0	0	0
Video Tutorials	0	0	0	0	0
JSS Host Guide	0	0	0	0	0
Calendar of Events	0	0	0	0	0

17. Think about the teacher or mentor you worked with in JSS. Answer the following either yes or no if each statement applied to your experience in JSS.



	Yes - my teacher or mentor did this	No - my teacher or mentor did not do this
Helped me become aware of STEM in my everyday life	0	0
Helped me understand how I can use STEM to improve my community	0	0
Used more than one way to help me learn	0	0
Gave me extra help when I needed it	0	0
Encouraged me to share ideas with others who have different backgrounds or viewpoints than I do	0	0
Allowed me to work on a team project or activity	0	0
Helped me learn or practice STEM skills	0	0
Gave me feedback to help me improve in STEM	0	0
Talked to me about the schooling I need for a STEM career	0	0
Recommended Army Educational Outreach Programs that match my interests	0	0
Discussed STEM careers with the DoD or government	0	0

18. As a result of your JSS experience, how much did you LEARN in the following areas?



	No new learning	Learned a little	Learned more than a little	Learned a lot
New knowledge of a STEM topic	0	0	0	0
Research on a STEM topic or field	0	0	0	0
How to conduct reseearch in STEM	0	0	0	0
How scientists and engineers work on real problems in STEM	0	0	0	0
What research work is like in STEM	0	0	0	0

19. Answer the items below while thinking about how much you learned during JSS. Mark for each item how much you learned in JSS about each one.



	No new learning	Learned a little	Learned more than a little	Learned a lot
How to ask a question that could be answered with scientific experiments	0	0	0	0
How to use knowledge and creativity to suggest a potential guess (hypothesis) for the outcome of an experiment	0	0	0	0
How to use knowledge and creativity to suggest a solution to a problem	0	0	0	0
How to make a model of an object or system showing its parts and how they work	0	0	0	0
How to design procedures for an experiment that are appropriate for the question to be answered	0	0	0	0
How to identify the limitations of the procedures used for data collection	0	0	0	0
How to carry out procedures for an experiment and recording data accurately	0	0	0	0
How to use computer models of objects or systems to test cause and effect relationships	0	0	0	0
How to organizing data in charts or graphs to find patterns and relationships	0	0	0	0
How to consider different interpretations of data when deciding how the data answer a question	0	0	0	0
How to consider different interpretations of data to decide if a solution to a problem works as planned	0	0	0	0
How to support an explanation for an observation with data from experiments	0	0	0	0
How to support an explanation with relevant scientific, mathematical, and/or engineering knowledge	0	0	0	0



How to identify the strengths and limitations of explanations in terms of how well they describe or predict observations	0	0	0	0
How to defend an argument that conveys how an explanation best describes an observation	0	0	0	0
How to identifying the strengths and limitations of solutions in terms of how well they meet design criteria	0	0	0	0
How to identify the strengths and limitations of data, interpretations, or arguments presented in technical or scientific texts	0	0	0	0
How to combine information from technical or scientific texts and other media to support your explanation of an observation	0	0	0	0
How to communicate about my experiments and explanations in different ways (through talking, writing, graphics, or mathematics)	0	0	0	0
How to combine information from technical or scientific texts and other media to support my solution to a problem	0	0	0	0

20. Answer the items below while thinking about how much you learned during JSS. Mark for each item how much you learned in JSS about each one.



	No new learning	Learned a little	Learned more than a little	Learned a lot
How to stick with an assignment or task until it is finished	0	0	0	0
How to make changes when things do not go as planned	0	0	0	0
How to include others' ideas when making decisions	0	0	0	0
How to communicate well with others	0	0	0	0
How to build relationships with professionals	0	0	0	0
How to connect a topic or idea with my personal values or beliefs	0	0	0	0

21. Answer the items below while thinking about how much you learned during JSS. Mark for each item how much you learned in JSS about each one.

	No new learning	Learned a little	Learned more than a little	Learned a lot
I am interested in a new STEM topic	0	0	0	0
I am thinking about pursuing a STEM career	0	0	0	0
I feel like I accomplished something in STEM	0	0	0	0
I feel more prepared for challenging STEM activities	0	0	0	0
I am thinking creatively about a STEM project or activity	0	0	0	0
I am interested in connecting with mentors who work in STEM	0	0	0	0



22. AS A RESULT OF competing in JSS, are you MORE or LESS likely to want to do the following things outside of school?

	Much less likely	Less likely	About the same before and after	More likely	Much more likely
Watch or read about STEM	0	0	0	0	0
Play or work with a mechanical or electrical device	0	0	0	0	0
Work on solving mathematical or scientific puzzles	0	0	0	0	0
Use a computer to design or program something	0	0	0	0	0
Talk with friends or family about STEM	0	0	0	0	0
Mentor or teach other students about STEM	0	0	0	0	0
Help with a community service project related to STEM	0	0	0	0	0
Participate in a STEM camp, club, or competition	0	0	0	0	0
Take an elective (not required) STEM class	0	0	0	0	0
Work on a STEM project or experiment in a university or professional setting	0	0	0	0	0



23. Ho	23. How far do you want to go in school?					
Select	Select one.					
0	Graduate from high school					
0	O Go to a trade or vocational school					
0	O Go to college for a little while					
0	O Finish college (get a Bachelor's degree)					
0	Get more education after college					

24. How interested are you in participating in the following programs in the future?



	I've never heard of this program	Not at all	A little	Somewhat	Very much
Camp Invention	0	0	0	0	0
eCYBERMISSION	0	0	0	0	0
Junior Solar Sprint (JSS)	0	0	0	0	0
Gains in the Education of Mathematics and Science (GEMS)	0	0	0	0	0
UNITE	0	0	0	0	0
Junior Science & Humanities Symposium (JSHS)	0	0	0	0	0
Science & Engineering Apprenticeship Program (SEAP)	0	0	0	0	0
Research & Engineering Apprenticeship Program (REAP)	0	0	0	0	0
High School Apprenticeship Program (HSAP)	0	0	0	0	0
College Qualified Leaders (CQL)	0	0	0	0	0
GEMS Near Peer Mentor Program	0	0	0	0	0
Undergraduate Research Apprenticeship Program (URAP)	0	0	0	0	0
Science Mathematics, and Research for Transformation (SMART) College Scholarship	0	0	0	0	0
National Defense Science & Engineering Graduate (NDSEG) Fellowship	0	0	0	0	0

25. How many jobs/careers in STEM did you learn about during JSS?

Select one.



0	None
0	1
0	2
0	3
0	4
0	5 or more

26. How many Army or Department of Defense (DoD) STEM jobs/careers did you learn about during JSS?						
Select one.						
0	None					
0	1					
0	2					
0	3					
0	4					
0	5 or more					



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

Select one per row.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
DoD researchers improve science and engineering fields	0	0	0	0	0
DoD researchers create new, cutting edge technologies	0	0	0	0	0
DoD researchers solve real-world problems	0	0	0	0	0
DoD research is important to most people	0	0	0	0	0

28. Please tell us about how much you agree with the following statements:



	Disagree - This did not happen	Disagree - This happened but not because of JSS	Agree - Felt this way before JSS	Agree - JSS helped grow my interest
I am more confident in my STEM knowledge, skills, and abilities	0	0	0	0
I am more interested in participating in STEM activities outside of school requirements	0	0	0	0
I am more aware of other AEOPs	0	0	0	0
I am more interested in participating in other AEOPs	0	0	0	0
I am more interested in taking STEM classes in school	0	0	0	0
I am more interested in earning a STEM degree	0	0	0	0
I am more interested in pursuing a career in STEM	0	0	0	0
I am more aware of Army or DoD STEM research and careers	0	0	0	0
I have a greater appreciation of Army or DoD STEM research	0	0	0	0
I am more interested in pursuing a STEM career with the Army or DoD	0	0	0	0



29. What are the three most important ways that JSS has helped you?	
Benefit #1:	
Benefit #2:	
Benefit #3:	

30. What are the three ways that we could make JSS better?	
Improvement #1:	
Improvement #2:	
Improvement #3:	

31. Please tell us about your overall satisfaction with your JSS experience.		





7 | Appendix E – Mentor Questionnaire



Contact Information	
Please verify the following information:	
*First Name:	
*Last Name:	
*Email Address:	
All fields with an asterisk (*) are required.	

*1. Do you agree to participate in this survey? (required)(*Required)		
Sele	Select one.	
0	Yes, I agree to participate in this survey	(Go to question number 2.)
0	O No, I do not wish to participate in this survey Go to end of chapter	

3. Please provide your email address: (optional)	

4. What	4. What is your gender?	
Select one.		
0	Male	
0	Female	
0	Choose not to report	

5. What is your race or ethnicity?
Select one.



0	Hispanic or Latino
0	Asian
0	Black or African American
0	Native American or Alaska Native
0	Native Hawaiian or Other Pacific Islander
0	White
0	Choose not to report
0	Other race or ethnicity, (specify)::

6. \	6. Which of the following BEST describes the organization you work for? (select ONE)	
Sele	ect one.	
0	No organization	
0	School or district (K-12)	
0	State educational agency	
0	Institution of higher education (vocational school, junior college, college, or university)	
0	Private Industry	
0	Department of Defense or other government agency	
0	Non-profit	
0	Other, (specify):	

7. Which of the following BEST describes your current occupation (select ONE)

Select one.



0	Teacher	(Go numbe	to r 8.)	question
0	Other school staff	(Go numbe	to r 8.)	question
0	University educator	(Go numbe	to r 13.)	question
0	Scientist, Engineer, or Mathematician in training (undergraduate or graduate student, etc.)	(Go numbe	to r 13.)	question
0	Scientist, Engineer, or Mathematics professional	(Go numbe	to r 13.)	question
0	Other, (specify)::	(Go numbe	to r 13.)	question

8. What grade level(s) do you teach (select all that apply)?		
Select all that apply.		
	Upper elementary	
	Middle school	
	High school	

9. Which best describes the location of your school?	
Select one.	
0	Frontier or tribal school
0	Rural (country)
0	Suburban
0	Urban (city)

10. At what kind of school did you teach while participating in JSS?
Select one.



0	Public school
0	Private school
0	Home school
0	Online school
0	Department of Defense school (DoDDS, DoDEA)

11. Do you work at a "Title-I" school?		
Select one.		
0	Yes	
0	No	
0	I am not sure	



12. Which of the following subjects do you teach? (select ALL that apply)			
Sele	Select all that apply.		
	Upper elementary		
	Physical science (physics, chemistry, astronomy, materials science, etc.)		
	Biological science		
	Earth, atmospheric, or oceanic science		
	Environmental science		
	Computer science		
	Technology		
	Engineering		
	Mathematics or statistics		
	Medical, health, or behavioral science		
	Social Science (psychology, sociology, anthropology)		
	Other, (specify)::		

13. Which of the following best describes your primary area of research?		
Select one.		
0	Physical science (physics, chemistry, astronomy, materials science, etc.)	
0	Biological science	
0	Earth, atmospheric, or oceanic science	
0	Environmental science	
0	Computer science	
0	Technology	
0	Engineering	
0	Mathematics or statistics	
0	Medical, health, or behavioral science	
0	Social Science (psychology, sociology, anthropology)	
0	Other, (specify)::	



14. At which of the following JSS sites did you participate? (Select ONE)

Select one.



0	Alabama
0	Arizona
0	California
0	Colorado
0	Connecticut
0	Delaware
0	Florida
0	Georgia
0	Idaho
0	Kansas
0	Kentucky
0	Louisiana
0	Maryland
0	Mississippi
0	Misssouri
0	Montana
0	New Hampshire
0	New Jersey
0	New Mexico
0	New York
0	North Carolina
0	North Dakota
0	Ohio
0	Oklahoma
0	Oregon
0	Pennsylvania
0	Rhode Island
0	South Carolina
0	Tennessee
0	Texas
0	Utah
L	



0	Virginia
0	Washington
0	West Virginia

15. Which of the following BEST describes your role during JSS?	
Select one.	
0	Competition advisor
0	Event or site host/director
0	Other, (specify)::

16. How many JSS students did you work with this year?	
	students.



17. How did you learn about JSS? (Check all that apply)			
Sele	Select all that apply.		
	Technology Student Association (TSA) website		
	Army Educational Outreach Program (AEOP) website		
	AEOP on Facebook, Twitter, Pinterest, or other social media		
	A STEM conference or STEM education conference		
	An email or newsletter from school, university, or a professional organization		
	Past JSS participant		
	A student		
	A colleague		
	My supervisor or superior		
	A JSS site host or director		
	Workplace communications		
	Someone who works with the Department of Defense (Army, Navy, Air Force)		
	Other, (specify)::		

18. 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."



	Never	Once	Twice	Three or more times	I've never heard of this program
Camp Invention	0	0	0	0	0
eCYBERMISSION	0	0	0	0	0
Junior Solar Sprint (JSS)	0	0	0	0	0
West Point Bridge Design Contest (WPBDC)	0	0	0	0	0
Junior Science & Humanities Symposium (JSHS)	0	0	0	0	0
Gains in the Education of Mathematics and Science (GEMS)	0	0	0	0	0
GEMS Near Peers	0	0	0	0	0
UNITE	0	0	0	0	0
Science & Engineering Apprenticeship Program (SEAP)	0	0	0	0	0
Research & Engineering Apprenticeship Program (REAP)	0	0	0	0	0
High School Apprenticeship Program (HSAP)	0	0	0	0	0
College Qualified Leaders (CQL)	0	0	0	0	0
Undergraduate Research Apprenticeship Program (URAP)	0	0	0	0	0
Science Mathematics, and Research for Transformation (SMART) College Scholarship	0	0	0	0	0
National Defense Science & Engineering Graduate (NDSEG) Fellowship	0	0	0	0	0



19. How SATISFIED were you	with the following JSS features?
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Select one per row

Select one per row.					
	Did not experience	Not at all	A little	Somewhat	Very much
Application or registration process	0	0	0	0	0
Communicating with Technology Student Association (TSA)	0	0	0	0	0
Communicating with JSS site coordinators	0	0	0	0	0
The physical location(s) of JSS's activities	0	0	0	0	0
Support for instruction or mentorship during program activities	0	0	0	0	0
Stipends (payment)	0	0	0	0	0
Invited speakers or "career" events	0	0	0	0	0
Field trips or laboratory tours	0	0	0	0	0

20. How USEFUL were the following JSS resources provided at jrsolarsprint.org?



	Did not experience	Not at all	A little	Somewhat	Very much
Official Technology Student Association Competition Rules	0	0	0	0	0
Local Competition Rules	0	0	0	0	0
Build A Car resources	0	0	0	0	0
Course Outline	0	0	0	0	0
STEM Standards	0	0	0	0	0
Lesson Plans	0	0	0	0	0
Terminology	0	0	0	0	0
Video Tutorials	0	0	0	0	0
JSS Host Guide	0	0	0	0	0
Calendar of Events	0	0	0	0	0

21. Which resources were MOST USEFUL for you in JSS?

22. What resources could be IMPROVED OR ADDED to better support you in JSS?





23. 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 JSS.

Select one per row.		
	Yes - I used this strategy	No - I did not use this strategy
Become familiar with my student(s) background and interests at the beginning of the JSS experience	0	0
Giving students real-life problems to investigate or solve	0	0
Selecting readings or activities that relate to students' backgrounds	0	0
Encouraging students to suggest new readings, activities, or projects	0	0
Helping students become aware of the role(s) that STEM plays in their everyday lives	0	0
Helping students understand how STEM can help them improve their own community	0	0
Asking students to relate real-life events or activities to topics covered in JSS	0	0

24. 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 JSS.



	Yes - I used this strategy	No - I did not use this strategy
Identify the different learning styles that my student (s) may have at the beginning of the JSS experience	0	0
Interact with students and other personnel the same way regardless of their background	0	0
Use a variety of teaching and/or mentoring activities to meet the needs of all students	0	0
Integrating ideas from education literature to teach/mentor students from groups underrepresented in STEM	0	0
Providing extra readings, activities, or learning support for students who lack essential background knowledge or skills	0	0
Directing students to other individuals or programs for additional support as needed	0	0
Highlighting under-representation of women and racial and ethnic minority populations in STEM and/or their contributions in STEM	0	0

25. 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 JSS.



	Yes - I used this strategy	No - I did not use this strategy
Having my student(s) tell other people about their backgrounds and interests	0	0
Having my student(s) explain difficult ideas to others	0	0
Having my student(s) listen to the ideas of others with an open mind	0	0
Having my student(s) exchange ideas with others whose backgrounds or viewpoints are different from their own	0	0
Having my student(s) give and receive constructive feedback with others	0	0
Having students work on collaborative activities or projects as a member of a team	0	0
Allowing my student(s) to resolve conflicts and reach agreement within their team	0	0

26. 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 JSS.



	Yes - I used this strategy	No - I did not use this strategy
Teaching (or assigning readings) about specific STEM subject matter	0	0
Having my student(s) search for and review technical research to support their work	0	0
Demonstrating laboratory/field techniques, procedures, and tools for my student(s)	0	0
Supervising my student(s) while they practice STEM research skills	0	0
Providing my student(s) with constructive feedback to improve their STEM competencies	0	0
Allowing students to work independently to improve their self-management abilities	0	0
Encouraging students to learn collaboratively (team projects, team meetings, journal clubs, etc.)	0	0
Encouraging students to seek support from other team members	0	0

27. 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 JSS.



	Yes - I used this strategy	No - I did not use this strategy
Asking my student(s) about their educational and/or career goals	0	0
Recommending extracurricular programs that align with students' goals	0	0
Recommending Army Educational Outreach Programs that align with students' goals	0	0
Providing guidance about educational pathways that will prepare my student(s) for a STEM career	0	0
Discussing STEM career opportunities within the DoD or other government agencies	0	0
Discussing STEM career opportunities in private industry or academia	0	0
Discussing the economic, political, ethical, and/or social context of a STEM career	0	0
Recommending student and professional organizations in STEM to my student(s)	0	0
Helping students build a professional network in a STEM field	0	0
Helping my student(s) with their resume, application, personal statement, and/or interview preparations	0	0



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

Select one per row.

	Did not experience	Not at all	A little	Somewhat	Very much
The Junior Solar Sprint website (jrsolarsprint.org)	0	0	0	0	0
Technology Student Association (TSA) website	0	0	0	0	0
Army Educational Outreach Program (AEOP) website	0	0	0	0	0
AEOP on Facebook, Twitter, Pinterest or other social media	0	0	0	0	0
AEOP brochure	0	0	0	0	0
It Starts Here! Magazine	0	0	0	0	0
JSS Program administrator or site coordinator	0	0	0	0	0
Invited speakers or "career" events	0	0	0	0	0
Participation in JSS	0	0	0	0	0

29. How USEFUL were each of the following in your efforts to expose your student(s) to Department of Defense (DoD) STEM careers during JSS.



	Did not experience	Not at all	A little	Somewhat	Very much
The Junior Solar Sprint website (jrsolarsprint.org)	0	0	0	0	0
Technology Student Association (TSA) website	0	0	0	0	0
Army Educational Outreach Program (AEOP) website	0	0	0	0	0
AEOP on Facebook, Twitter, Pinterest or other social media	0	0	0	0	0
AEOP brochure	0	0	0	0	0
It Starts Here! Magazine	0	0	0	0	0
JSS Program administrator or site coordinator	0	0	0	0	0
Invited speakers or "career" events	0	0	0	0	0
Participation in JSS	0	0	0	0	0

30. Which of the following AEOPs did YOU EXPLICITLY DISCUSS with your student(s) during JSS? (check ALL that apply)



	Yes - I discussed this program with my student(s)	No - I did not discuss this program with my student(s)
Gains in the Education of Mathematics and Science (GEMS)	0	0
UNITE	0	0
Junior Science & Humanities Symposium (JSHS)	0	0
Science & Engineering Apprenticeship Program (SEAP)	0	0
Research & Engineering Apprenticeship Program (REAP)	0	0
High School Apprenticeship Program (HSAP)	0	0
College Qualified Leaders (CQL)	0	0
GEMS Near Peer Mentor Program	0	0
Undergraduate Research Apprenticeship Program (URAP)	0	0
Science Mathematics, and Research for Transformation (SMART) College Scholarship	0	0
National Defense Science & Engineering Graduate (NDSEG) Fellowship	0	0
I discussed AEOP with my student(s) but did not discuss any specific program	0	0



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

Select one per row.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
DoD researchers advance science and engineering fields	0	0	0	0	0
DoD researchers develop new, cutting edge technologies	0	0	0	0	0
DoD researchers solve real-world problems	0	0	0	0	0
DoD research is valuable to society	0	0	0	0	0

32. How often did YOUR STUDENT(S) have opportunities to do each of the following in JSS?



	Not at all	At least once	A few times	Most days	Every day
Learn new science, technology, engineering, or mathematics (STEM) topics	0	0	0	0	0
Apply STEM knowledge to real-life situations	0	0	0	0	0
Learn about new discoveries in STEM	0	0	0	0	0
Learn about different careers that use STEM	0	0	0	0	0
Interact with scientists or engineers	0	0	0	0	0
Communicate with other students about STEM	0	0	0	0	0
Use laboratory or field techniques, procedures, and tools	0	0	0	0	0
Participate in hands-on STEM activities	0	0	0	0	0
Work as part of a team	0	0	0	0	0
Identify questions or problems to investigate	0	0	0	0	0
Design an investigation	0	0	0	0	0
Carry out an investigation	0	0	0	0	0
Analyze data or information	0	0	0	0	0
Draw conclusions from an investigation	0	0	0	0	0
Come up with creative explanations or solutions	0	0	0	0	0
Build or make a computer model	0	0	0	0	0



33. AS A RESULT OF THEIR JSS EXPERIENCE, how much did your student(s) GAIN in the following areas?

Select one per row.

Select one per row.				
	No gain	Small gain	Medium gain	Large gain
In depth knowledge of a STEM topic(s)	0	0	0	0
Knowledge of research conducted in a STEM topic or field	0	0	0	0
Knowledge of research processes, ethics, and rules for conduct in STEM	0	0	0	0
Knowledge of how professionals work on real problems in STEM	0	0	0	0
Knowledge of what everyday research work is like in STEM	0	0	0	0

34. W	hich category best describes the focus of your student(s) JSS activities?
Select	one.
0	Science
0	Technology
0	Engineering
0	Mathematics
0	Integrated STEM (more than one area)

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

Select one per row.

If answered, go to question number 37.



	No gain	Small gain	Medium gain	Large gain
Asking a question that can be answered with one or more scientific experiments	0	0	0	0
Using knowledge and creativity to suggest a testable explanation (hypothesis) for an observation	0	0	0	0
Making a model of an object or system showing its parts and how they work	0	0	0	0
Carrying out procedures for an experiment and recording data accurately	0	0	0	0
Using computer models of objects or systems to test cause and effect relationships	0	0	0	0
Organizing data in charts or graphs to find patterns and relationships	0	0	0	0
Considering different interpretations of data when deciding how the data answer a question	0	0	0	0
Supporting an explanation for an observation with data from experiments	0	0	0	0
Defending an argument that conveys how an explanation best describes an observation	0	0	0	0
Integrating information from technical or scientific texts and other media to support your explanation of an observation	0	0	0	0
Communicating about your experiments and explanations in different ways (through talking, writing, graphics, or mathematics)	0	0	0	0

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



	No gain	Small gain	Medium gain	Large gain
Defining a problem that can be solved by developing a new or improved object, process, or system	0	0	0	0
Using knowledge and creativity to propose a testable solution for a problem	0	0	0	0
Making a model of an object or system to show its parts and how they work	0	0	0	0
Carrying out procedures for an experiment and recording data accurately	0	0	0	0
Using computer models of an object or system to investigate cause and effect relationships	0	0	0	0
Considering different interpretations of the data when deciding if a solution works as intended	0	0	0	0
Organizing data in charts or graphs to find patterns and relationships	0	0	0	0
Supporting a solution for a problem with data from experiments	0	0	0	0
Defend an argument that conveys how a solution best meets design criteria	0	0	0	0
Integrating information from technical or scientific texts and other media to support your solution to a problem	0	0	0	0
Communicating information about your design experiments and solutions in different ways (through talking, writing, graphics, or math equations)	0	0	0	0



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

Select one per row.

	No gain	Small gain	Medium gain	Large gain
Sticking with a task until it is finished	0	0	0	0
Making changes when things do not go as planned	0	0	0	0
Including others' perspectives when making decisions	0	0	0	0
Communicating effectively with others	0	0	0	0
Desire to build relationships with professionals in a field	0	0	0	0
Connecting a topic or field with their personal values	0	0	0	0

38. Which of the following statements describe YOUR STUDENT(S) after participating in the JSS program?



	Disagree - This did not happen	Disagree - This happened but not because of JSS	Agree - JSS contributed	Agree - JSS was primary reason
More confident in STEM knowledge, skills, and abilities	0	0	0	0
More interested in participating in STEM activities outside of school requirements	0	0	0	0
More aware of other AEOPs	0	0	0	0
More interested in participating in other AEOPs	0	0	0	0
More interested in taking STEM classes in school	0	0	0	0
More interested in earning a STEM degree	0	0	0	0
More interested in pursuing a career in STEM	0	0	0	0
More aware of DoD STEM research and careers	0	0	0	0
Greater appreciation of DoD STEM research	0	0	0	0
More interested in pursuing a STEM career with the DoD	0	0	0	0



39. What are the three most important strengths of JSS?

Strength #1:	
Strength #2:	
Strength #3:	

40. What are the three ways JSS should be improved for future participants?	
Improvement #1:	
Improvement #2:	
Improvement #3:	

41. Please tell us about your overall satisfaction with your JSS experience.	







8 | Appendix F – TSA's Response to FY17 Evaluation

