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# **ARMY EDUCATIONAL OUTREACH PROGRAM**

JSS

2019 Annual Program Evaluation Report Appendices

April 2020





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# Questionnaires

As per the approved FY19 AEOP APP, the external evaluation of JSSS (conducted by NC State University) includes three post-program questionnaires:

- 1. AEOP Youth Questionnaire to be completed by student participants at the National TSA Conference JSS event and participants from DoD schools; 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 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.

The questionnaires were 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 student and mentor questionnaires provided for their program.



# Focus Group Site Visits

As per the approved FY19 AEOP APP, the external evaluation of JSSS includes site visit/onsite focus groups at the national 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, evaluators' 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 10-15 youth participants;
- One 45-minute focus group with 6-8 mentors;
- 30-60 minutes to observe the 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.

#### **Selecting Focus Group Participants:**

Evaluators appreciate event administrators' assistance in helping to assemble a diverse group of focus group participants who can provide information about a range of experiences possible in the JSHS. Ideally, this assistance is in the form of pre-event notifications of the focus groups, including scheduled dates, times, and locations.

Ideally, each student focus group will be inclusive of

- males and females (equal representation if possible),
- range of grade levels of students,
- range of race/ethnicities of students served by the program, and
- range of STEM interests (if known).

We prefer that students volunteer themselves after receiving the invitation to participate in the focus group, but will pursue students nominated by program staff or mentors. Participants may RSVP to evaluators privately or simply show up at the focus group location; however, sign-up sheets should not be used--if they are publically displayed, they breach participant confidentiality.

A number of different adult participants of JSHS--regional directors, national judges, chaperones, and even parents – are invited to participate in focus groups. We encourage any of these groups to participate in the adult focus group and have geared questions to be applicable across groups.



# **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 JSS 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.



# 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 a focus group before, I'd like to give the group 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:

- What is shared in the room stays in the room.
- Only one person speaks at a time.
- If you disagree please do so respectfully.
- It is important for us to hear the positive and negative sides of an issue.
- This is voluntary you may choose not to answer any question, or stop participating at any time.
- We will be audio recording the session for note-taking purposes only. Audio will be destroyed.
- Do you have any questions before we begin?

### **Key Questions**

- 1. Why did you choose to participate in JSS this year?
  - O How did you hear about JSS?
  - O Who did you hear about it from?
- 2. We need to understand more about how JSS is teaching students about STEM career opportunities in the Army and Department of Defense.
  - 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.)?
  - o 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? (Camp Invention, GEMS, JSHS, etc.)
  - o How did you learn about them?
  - o Do you think that you will try to participate in any of those programs?
- **4.** Were you happy that you chose to participate in JSS this year?
  - O What, specifically do you think you got out of participating in JSS?
  - Were there any other benefits of participating in JSS?
- **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

<u>Facilitator:</u> 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:

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

#### **Key Questions**

- 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, JSS included.

- **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?
  - O 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?
- **3.** The AEOP needs to know if JSS is teaching students about the other STEM outreach programs that it sponsors.
  - o First, are you aware of the other programs offered by the AEOP? (e.g., GEMS, JSHS, etc.)
  - Have you seen any efforts at JSS to educate adults or students about the other AEOP programs?
  - O What seems to work the best? The worst?
  - o 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.).
  - o Have you seen any efforts by JSS to help engage underserved or underrepresented groups of adults and youth?
  - O What strategies seem to work the best? The worst?
  - o 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 – JSS Student Questionnaire



Conta	act Information		
Pleas	e verify the following information:		
*First	t Name:		
*Last	Name:		
*Ema	ail Address:		
All fie	elds with an asterisk (*) are required.		
*1. D	o you agree to participate in this survey? (required)(*Required)		
Selec	t one.		
0	Yes, I agree to participate in this survey		
0	No, I do not wish to participate in this survey	Go to end of chapter	



*2. What g	grade will you start in the fall? (select one)(*Required)
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	s your gender?(*Required)
Select one.	
0	Male
0	Female
0	Choose not to report



*4. W	hat is your race or ethnicity?(*Required)
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. Wh	nich best describes the location of your school?(*Required)
Select	one.
0	Urban - in a city
0	Suburban - close to a city
0	Rural - not near a city - in the country
0	I don't know



*6. What is the main language you speak?(*Required)
Select all that apply.
□ English
Other language
*7. Did one or both of your parents graduate from college or a university?(*Required)
Select all that apply.
□ Yes
□ No
□ Don't know



*8. At which	of the following JSS sites did you participate? (Select ONE)(*Required)
Select one.	
0	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
0	Virginia
0	Washington
0	West Virginia



*9. Have you participated in any of the following AEOP programs previously and if so, how many times?(*Required)					
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	



\*10. STEM PRACTICES - How often did you do each of the following in STEM classes at school?(\*Required)

	Not at all	At least once	A few times	Most days	Every day
*Work with a person who works in a STEM field on their real world project	0	0	0	0	0
*Work with a person who works in a STEM field on a project assigned by my teacher	0	0	0	0	0
*Plan my own research based on my own ideas	0	0	0	0	0
*Present my project to a judges or the community	0	0	0	0	0
*Interact with people working in STEM careers	0	0	0	0	0
*Use laboratory tools and steps to do an experiment	0	0	0	0	0
*Find questions or problems to investigate	0	0	0	0	0
*Plan and do an investigation or experiment	0	0	0	0	0
*Examine data or information to make conclusions or decisions	0	0	0	0	0
*Work with others as part of a team or group	0	0	0	0	0
*Use a computer to make a model of something	0	0	0	0	0
*Solve real-world problems	0	0	0	0	0



\*11. STEM PRACTICES - How often did you do each of the following in JSS this year?(\*Required)

	Not at all	At least once	A few times	Most days	Every day
*Work with a person who works in a STEM field on their real world project	0	0	0	0	0
*Work with a person who works in a STEM field on my JSS project	0	0	0	0	0
*Plan my own research based on my own ideas	0	0	0	0	0
*Present my project to a judges or the community	0	0	0	0	0
*Interact with people working in STEM careers	0	0	0	0	0
*Use laboratory tools and steps to do an experiment	0	0	0	0	0
*Find questions or problems to investigate	0	0	0	0	0
*Plan and do an investigation or experiment	0	0	0	0	0
*Examine data or information to make conclusions or decisions	0	0	0	0	0
*Work with others as part of a team or group	0	0	0	0	0
*Use a computer to make a model of something	0	0	0	0	0
*Solve real-world problems	0	0	0	0	0



\*12. STEM KNOWLEDGE - As a result of your JSS experience, how much did you LEARN in the following areas?(\*Required)

	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



\*13. STEM SKILLS - 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.(\*Required)

	No new learning	Learned a little  Learned a more than a little		Learned a lot
*How to explain a problem that can be solved by developing a new product or process	0	0	0	0
*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 solution to a problem	0	0	0	0
*How to make a model to show how something works	0	0	0	0
*How to design steps for an experiment that work	0	0	0	0
*How to identify the limitations of the steps and tools used for collecting data	0	0	0	0
*How to carry out an experiment and record data correctly	0	0	0	0
*How to create charts or graphs to show data and find patterns	0	0	0	0
*How to consider different interpretations of data to decide if something works as planned	0	0	0	0
*How to support my explanation with my STEM knowledge or data from experiments	0	0	0	0



\*13. STEM SKILLS - 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.(\*Required)

*How to identify the strengths and limitations of data or arguments presented in technical or scientific texts	0	0	0	0
*How to present an argument that uses data and/or findings from an experiment	0	0	0	0
*How to defend an argument based upon findings from an experiment or other data	0	0	0	0
*How to integrate information from texts or other sources to support my explanation of an experiment or solution to problem	0	0	0	0

\*14. 21st CENTURY SKILLS - 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.(\*Required)

	No new learning	Learned a little	Learned more than a little	Learned a lot
*How to think creatively	0	0	0	0
*How to work creatively with others	0	0	0	0
*How to use my creative ideas to make a product	0	0	0	0
*How to think about how systems work and how parts interact with each other	0	0	0	0



\*14. 21st CENTURY SKILLS - 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.(\*Required)

*How to evaluate other people's evidence, arguments, and beliefs	0	0	0	0
*How to solve problems	0	0	0	0
*How to communicate clearly in speaking and writing forms with others	0	0	0	0
*How to collaborate with others effectively	0	0	0	0
*How to interact effectively with others in a respectful and professional manner	0	0	0	0
*How to get and evaluate information and sources of information in an acceptable time period	0	0	0	0
*How to use and manage information or data accurately, creatively, and ethically	0	0	0	0
*How to analyze media or the news to understand the different points of view of people	0	0	0	0
*How to create media products such as videos, blogs, and social media	0	0	0	0
*How to use technology for research, organizing ideas, evaluating things, and communicating information	0	0	0	0
*How to adapt to change when things don't go as planned	0	0	0	0



\*14. 21st CENTURY SKILLS - 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.(\*Required)

*How to use feedback on my work effectively	0	0	0	0
*How to set goals and use time wisely	0	0	0	0
*How to work alone and complete tasks on time	0	0	0	0
*How to take initiative and do work without being told to	0	0	0	0
*How to manage projects to complete them on time	0	0	0	0
*How to stick with a task until it is finished to produce results	0	0	0	0
*How to lead and guide others in a team or group	0	0	0	0
*How to be responsible to others - thinking about the larger community good	0	0	0	0



\*15. STEM CONFIDENCE - 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.(\*Required)

	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



\*16. MENTORING STRATEGIES - 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. (\*Required)

	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



\*17. PROGRAM FEATURES - How USEFUL were the following JSS resources provided at the AEOP website?(\*Required)

	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



\*18. PROGRAM SATISFACTION - How HAPPY were you with the following JSS program parts?(\*Required)

	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



\*19. FUTURE INTEREST - How interested are you in participating in the following programs in the future?(\*Required)

	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



*19. FUTURE INTEREST - How interested are yo future?(*Required)	u in participating in t	the follow	wing pro	grams in the	
*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

*20. STEM CAREERS - How many jobs/careers in STEM did you learn about during JSS?(*Required)					
Select one.					
0	None				
0	1				
0	2				
0	3				
0	4				
0	5 or more				



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

*22. DoD RESEARCH - Ho	ow much do you agree or	disagree with the fo	ollowing statements abou
Department of Defense	(DoD) researchers and re	esearch:(*Required)	

	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



\*23. STEM INTEREST - AS A RESULT OF competing in JSS, are you MORE or LESS likely to want to do the following things outside of school?(\*Required)

	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



*23. STEM INTEREST - AS A RESULT OF competing in JSS, are you MORE or LESS likely to want to do the following things outside of school?(*Required)						
*Work on a STEM project or experiment in a university or professional setting	0	0	0	0	0	

*24. F	*24. FUTURE ENGAGEMENT - How far do you want to go in school?(*Required)				
Select	one.				
0	Graduate from high school				
0	Go to a trade or vocational school				
0	Go to college for a little while				
0	Finish college (get a Bachelor's degree)				
0	Get more education after college				



\*25. RESOURCES - How much did each of the following resources help you learn about JSS and other Army Educational Outreach Programs (AEOPs)?(\*Required)

	Did not experience	Not at all	A little	Somewhat	Very much
*The 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 printed materials	0	0	0	0	0
*My JSS mentor(s)	0	0	0	0	0
*My participation in JSS	0	0	0	0	0
*Speakers who I heard during JSS	0	0	0	0	0
*My teacher	0	0	0	0	0



\*26. RESOURCES - How much did each of the following resources help you learn about STEM careers in the Army or Department of Defense (DoD)?(\*Required)

	Did not experience	Not at all	A little	Somewhat	Very much
*The 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 printed materials	0	0	0	0	0
*My JSS mentor(s)	0	0	0	0	0
*My participation in JSS	0	0	0	0	0
*Speakers I heard during JSS	0	0	0	0	0
*My teacher	0	0	0	0	0



\*27. OVERALL IMPACT - Please tell us about how much you agree with the following statements:(\*Required)

	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



28. What are the three most important ways that JSS has helped you?	
Benefit #1:	
Benefit #2:	
Benefit #3:	
29. What are the three ways that we could make JSS better?	
Improvement #1:	
Improvement #2:	
Improvement #3:	
30. Please tell us about your overall satisfaction with your JSS experience.	



## 7 | Appendix E – JSS Mentor Questionnaire



Contact In	<u>formation</u>				
Please veri	ify the following information:				
*First Nam	*First Name:				
*Last Nam	e:				
*Email Add	dress:				
All fields w	vith an asterisk (*) are required.				
*1. Do you	agree to participate in this survey? (required)(*Required	1)			
Select one.					
O Yes, I	agree to participate in this survey	(Go to q	uestion number 2.)		
O No, 10	do not wish to participate in this survey	Go to er	nd of chapter		
3. Please p	provide your email address: (optional)				
*4. What is	s your gender?(*Required)				
Select one.					
0	Male				
0	Female				
0	Choose not to report				



*5. W	hat is your race or ethnicity?(*Required)
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)::



۳δ.	which of the following BEST describes the organization you work for? (select ONE)("Required)
Sel	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)(*Required)
Sel	ect one.
0	Teacher
0	Other school staff
0	University educator
0	Scientist, Engineer, or Mathematician in training (undergraduate or graduate student, etc.)
0	Scientist, Engineer, or Mathematics professional



Other, (specify)::

8. At which o	f 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



8. At which	of the following JSS sites did you participate? (Select ONE)
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
0	Virginia
0	Washington
0	West Virginia



9. Which	of the following BEST describes your role during JSS?	
Select or	ne.	
0	Competition advisor	
0	Event or site host/director	
0	Other, (specify)::	
10. How	many JSS students did you work with this year?	
		students.



*11	L. LEARNED ABOUT AEOP - How did you learn about AEOP? (Check all that apply)(*Required)
Sele	ect 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)::



\*12. PREVIOUS PARTICIPATION - 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)

	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



*12. PREVIOUS PARTICIPATION - 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)							
*College Qualified Leaders (CQL)							
*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		



\*13. STEM PRACTICES - How often did YOUR STUDENT(S) have opportunities to do each of the following in JSS?(\*Required)

	Not at	At least once	A few times	Most days	Every day
*Work with a person who works in a STEM field on their real world project	0	0	0	0	0
*Work with a person who works in a STEM field on a project assigned by a teacher	0	0	0	0	0
*Plan research based on their own ideas	0	0	0	0	0
*Present a project to judges or the community	0	0	0	0	0
*Interact with people working in STEM careers	0	0	0	0	0
*Use laboratory tools and procedures to do an experiment	0	0	0	0	0
*Determine questions or problems to investigate	0	0	0	0	0
*Plan and do an investigation or experiment	0	0	0	0	0
*Examine data or information to make conclusions or decisions	0	0	0	0	0
*Work with others as a part of a team or group	0	0	0	0	0
*Use a computer to make a model of something	0	0	0	0	0
*Solve real-world problems	0	0	0	0	0



\*14. STEM KNOWLEDGE - AS A RESULT OF THEIR JSS EXPERIENCE, how much did your student(s) GAIN in the following areas?(\*Required)

	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



\*15. STEM SKILLS - AS A RESULT OF THEIR JSS EXPERIENCE, how much did your student(s) GAIN in their abilities to do each of the following?(\*Required)

	No gain	Small gain	Medium gain	Large gain
*Explaining a problem that can be solved by developing a new product or process	0	0	0	0
*Asking a question that can be answered with scientific experiments	0	0	0	0
*Using knowledge and creativity to suggest a solution to a problem	0	0	0	0
*Constructing a model of something to show how it works	0	0	0	0
*Designing procedures for an experiment that work	0	0	0	0
*Identifying limitations of procedures and tools used for collecting data	0	0	0	0
*Conducting an experiment and recording data correctly	0	0	0	0
*Creating charts or graphs to show data and find patterns	0	0	0	0
*Considering different interpretations of data to decide if something works as planned	0	0	0	0
*Supporting an explanation for an observation with data from experiments	0	0	0	0
*Identifying strengths and limitations of data or arguments presented in texts	0	0	0	0
*Presenting an argument that uses data and/or findings from an experiment	0	0	0	0



\*16. 21st CENTURY SKILLS - AS A RESULT OF THE JSS EXPERIENCE, how much did your student(s) GAIN (on average) in the skills/abilities listed below?(\*Required)

	No gain	Small gain	Medium gain	Large gain
*Thinking creatively	0	0	0	0
*Working creatively with others	0	0	0	0
*Using creative ideas to make a product	0	0	0	0
*Thinking about how systems work and how parts interact with each other	0	0	0	0
*Evaluating others' evidence, arguments, and beliefs	0	0	0	0
*Solving problems	0	0	0	0
*Communicating clearly (written and oral) with others	0	0	0	0
*Collaborating with others effectively and respectfully in diverse teams	0	0	0	0
*Interacting effectively with others in a respectful and professional manner	0	0	0	0
*Accessing and evaluating information efficiently (time) and critically (evaluates sources)	0	0	0	0
*Using and managing data accurately, creatively, and ethically	0	0	0	0
*Analyzing media (news) understanding points of view in the media	0	0	0	0



\*16. 21st CENTURY SKILLS - AS A RESULT OF THE JSS EXPERIENCE, how much did your student(s) GAIN (on average) in the skills/abilities listed below?(\*Required)

*Creating media products like videos, blogs, social mediat	0	0	0	0
*Use technology as a tool to research, organize, evaluate, and communicate information	0	0	0	0
*Adapting to change when things do not go as planned	0	0	0	0
*Incorporating feedback into work effectively	0	0	0	0
*Setting goals and utilizing time wisely	0	0	0	0
*Working independently and completing tasks on time	0	0	0	0
*Taking initiative and doing work without being told to	0	0	0	0
*Prioritizing results - sticking with a task until it is finished	0	0	0	0
*Leading and guiding others in a team or a group	0	0	0	0
*Being responsible to others - thinking about the larger community	0	0	0	0



\*17. MENTORING STRATEGIES - 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.(\*Required)

	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



\*18. MENTORING STRATEGIES - 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.(\*Required)

	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



\*19. MENTORING STRATEGIES - 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.(\*Required)

	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



\*20. MENTORING STRATEGIES - 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.(\*Required)

	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



\*21. MENTORING STRATEGIES - This list describes mentoring strategies that are effective ways to support students' STEM educational and career pathways. From this list, please indicate which strategies you used when working with your student(s) in JSS(\*Required)

	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



\*22. PROGRAM SATISFACTION - How SATISFIED were you with the following JSS features?(\*Required)

	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



\*23. FUTURE INTEREST - Which of the following AEOPs did YOU EXPLICITLY DISCUSS with your student(s) during JSS? (check ALL that apply)(\*Required)

	Yes - I discussed this program with my	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



\*24. DoD RESEARCH - How much do you agree or disagree with the following statements about Department of Defense (DoD) researchers and research:(\*Required)

	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



25. RESOURCES - How USEFUL were the following JSS resources provided at jrsolarsprint.org?

	Did not experience	Not at	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



\*26. RESOURCES - How useful were each of the following in your efforts to expose student(s) to Army Educational Outreach Programs (AEOPs) during JSS?(\*Required)

	Did not experience	Not at all	A little	Somewhat	Very much
*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 printed materials	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



\*27. RESOURCES - How USEFUL were each of the following in your efforts to expose your student(s) to Department of Defense (DoD) STEM careers during JSS.(\*Required)

	Did not experience	Not at all	A little	Somewhat	Very much
*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 printed materials	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



\*28. OVERALL IMPACT - Which of the following statements describe YOUR STUDENT(S) after participating in the JSS program?(\*Required)

	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



29. What are the three most important strengths of JSS?	
Strength #1:	
Strength #2:	
Strength #3:	
30. What are the three ways JSS should be improved for future participa	n+c2
30. What are the three ways 355 should be improved for future participal	intsr
Improvement #1:	
Improvement #2:	
Improvement #3:	
31. Please tell us about your overall satisfaction with your JSS experience	e.





## 8 | Appendix F – TSA Response to FY19 Evauation

