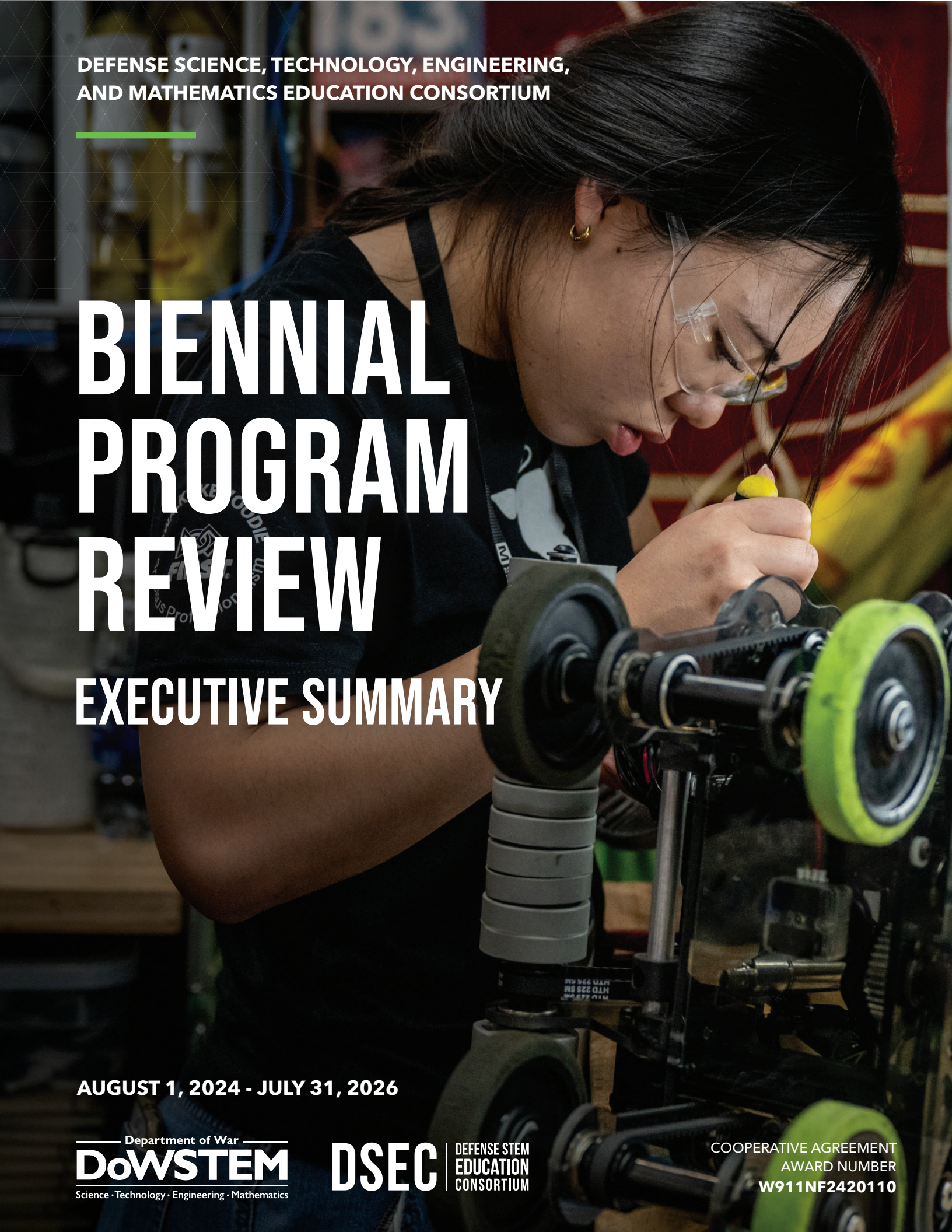
DEFENSE SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS EDUCATION CONSORTIUM

BIENNIAL PROGRAM REVIEW

EXECUTIVE SUMMARY



AUGUST 1, 2024 - JULY 31, 2026

Department of War
DoWSTEM
Science · Technology · Engineering · Mathematics

DSEC DEFENSE STEM EDUCATION CONSORTIUM

COOPERATIVE AGREEMENT
AWARD NUMBER
W911NF2420110

The Defense Science, Technology, Engineering, and Mathematics Education Consortium (DSEC) is a collaborative partnership that aims to broaden STEM literacy and develop an agile workforce with the technical excellence to defend our Nation.

This Biennial Program Review (BPR) summarizes the activities and accomplishments of DSEC during the Base Period, August 1, 2024, through July 31, 2026.



BASE PERIOD KEY FINDINGS AND HIGHLIGHTS

For purposes of this review, findings represent evidence-based results and trends observed during the Base Period, as well as conclusions based on these data. Findings include qualitative and quantitative data provided by STEM outreach partners, regional hub leads, and participants. Highlights represent notable activities, accomplishments, milestones, and investments that contributed to those results.

Select photos used throughout this report are from the following DoW STEM-sponsored programs from 2024 through 2025 and may not be reproduced or used without the written consent of DoW STEM: DoW STEM Ambassador Convening in Washington, DC; DoW STEM Bridge Program at Walter Reed Army Institute of Research in Silver Spring, MD; DoW STEM Technical Exchange in Washington, DC; *FIRST* Championship in Houston, TX; Camp Invention in Woodbridge, VA; STEMKAMP in Chesapeake, VA.
Unless otherwise noted, photos by: Mary F. Calvert or Christopher Johns.

GOAL 1:

Inspire community engagement in DoW STEM education programs and activities to provide meaningful STEM learning opportunities for students and educators.

DSEC creates a continuum of meaningful STEM experiences that build awareness, interest, and sustained participation among students and educators across school and out of school settings.

95%

of K-8 participants reported interest in STEM.

86%

of K-8 participants indicated that DSEC programming increased their STEM interest.

78%

of educators reported that DSEC programming increased their awareness of DoW STEM opportunities.

FINDINGS

1. **DSEC programming increased students' interest in and engagement with STEM.**

   More than 95% of K–8 participants reported interest in STEM, and more than 86% indicated that DSEC programming increased their STEM interest. Among responding high school students, more than 74% planned to take additional STEM courses beyond graduation requirements, while 86% planned to take advanced STEM courses.

2. **Students reported strong STEM confidence and positive perceptions of DSEC programming.**

   67% of responding elementary students were confident in their STEM ability. Among middle, high school, and postsecondary respondents, 90% reported moderate or strong confidence in their STEM ability.

3. **Educators reported greater confidence in their teaching of STEM practices.**

   63% of educators reported that DSEC programming had a moderate influence on their STEM teaching confidence.

4. **Educators increased their awareness of DoW STEM opportunities available to students.**

   78% of responding educators reported that DSEC programming moderately or strongly increased their awareness of DoW STEM opportunities.

780,600

DoW STEM social media impressions helped expand public awareness of programs, events, opportunities and resources.

500+

stakeholders participated in the 2025 DoW STEM Technical Exchange.



HIGHLIGHTS

- **Expanded public awareness of DoW STEM programs, events, opportunities, and resources** through coordinated digital communications, newsletters, social media, partner promotion, and outreach campaigns. These efforts generated 235,900 website users, 455,200 page views, 780,600 social media impressions, and 146,500 views of website pages with information on DoW STEM opportunities.

- **Convened more than 500 stakeholders through the 2025 DoW STEM Technical Exchange**, featuring 164 speakers and 70 breakout sessions that supported information sharing and collaboration among federal agencies, educators, industry representatives, and STEM-focused organizations.

- **Expanded community-based STEM learning through regional hubs**. The **San Antonio Hub** supported student recruitment for the inaugural Gains in the Education of Mathematics and Science program and expanded career-connected STEM opportunities through local partnerships. The **Prince George's County Hub** connected students with United States Naval Academy speakers and school tours, strengthening awareness of STEM education and career pathways. The **Dayton Hub** facilitated educator programs, student experiences, and externship placements at Wright-Patterson Air Force Base, increasing access to place-based STEM learning opportunities.

GOAL 2:

Attract the Nation's and DoW's current and future STEM workforce through multiple pathways to educational and career opportunities.

DSEC uses career-connected learning (CCL) to help students explore, enhance, and excel in STEM careers through mentorship, job shadowing, internships, simulations, and pathway-aligned learning connected to DoW careers and the Defense Industrial Base (DIB).

79%

of middle school students reported increased awareness of DoW STEM careers.

60%

of high school and postsecondary students reported increased awareness of DoW STEM careers.

93%

of educators reported increased awareness of DoW STEM careers.

FINDINGS

1. **Students reported increased awareness of STEM careers following DSEC participation.**

   Among high school and postsecondary respondents, 64% reported increased STEM career awareness. The analysis found a large, statistically significant positive shift in reported awareness.

2. **Students reported increased awareness of DoW STEM careers.**

   Among high school and postsecondary respondents, 60% reported increased awareness of DoW STEM careers. The largest gains occurred among students who began with lower levels of awareness prior to their engagement in programming.

3. **Middle school students and educators reported greater knowledge of STEM and DoW STEM careers.**

   87% of responding middle school students said DSEC programming helped them learn about STEM careers, and 86% reported increased interest in those careers. 79% said programming helped them learn about DoW STEM careers. Among educators, 95% reported increased awareness of STEM careers, 96% reported greater understanding of how to teach about STEM careers, and 93% reported increased awareness of DoW STEM careers.

87%

of middle school students said DSEC programming helped them learn about STEM careers.

64%

of high school and postsecondary students reported increased STEM career awarenes.

96%

of educators reported a greater understaning of how to teach about STEM careers.

HIGHLIGHTS

- **Expanded the CCL Framework to incorporate an employer perspective**, building on its student and educator components and incorporating input from Defense Industrial Base (DIB) organizations.
- **Aligned partner programs with CCL categories** and expanded program profiles to capture work to build awareness of Critical Technical Areas, STEM careers, and durable skills across the DSEC portfolio.
- **Expanded regional career-connected experiences.** The **San Antonio Hub** developed educator externship placements with the University of Texas at San Antonio National Security Collaboration Center, Southwest Research Institute, and Garver USA Engineering. The **Prince George's County Hub** strengthened connections to the United States Naval Academy and Naval Surface Warfare Center Carderock, while the **Dayton Hub** supported educator and student experiences at Wright-Patterson Air Force Base.



GOAL 3:
Increase participation of students and educators in STEM education and workforce development programs, activities, and outreach.

DSEC expands access to high-quality STEM learning and workforce development opportunities by engaging students and educators through intentional outreach, partner programming, and community-based activities that broaden participation and strengthen connections to future STEM pathways.

60%

increase in participants between Base Period Year 1 and Base Period Year 2.

71%

of educator participants were teachers.

110%

increase of the number of volunteers participating in programs.

FINDINGS

1. **Overall, DSEC participation increased between Base Period Year 1 and Base Period Year 2.**

   Participation grew from 55,506 to 89,020, representing a reported increase of 60%. Across both years, DSEC served 144,526 participants.

2. **Student and educator participation both increased.**

   Student participation grew from 53,387 to 86,367, while educator participation increased from 2,119 to 2,653. Teachers represented more than half of educator participants in both years, increasing from 56% to 71% of reported educator participation.

3. **The number of military-connected students increased, but their percentage of total participation declined.**

   Military-connected participation increased from 10,266 to 14,588 students, while the proportion declined from 19% to 16% because participation among students who were not military-connected grew more rapidly.

4. **Volunteer participation and partner reporting of volunteers increased.**

   The number of volunteers increased from 2,373 to 4,980, while the number of programs reporting volunteers increased from 19 to 26.

86,367

students participated in DSEC programs.

2,653

educators participated in DSEC programs.

HIGHLIGHTS

- **Added STEM NOLA as a DSEC partner**, contributing three student-focused programs that served 1,016 students.
- **Expanded educator-focused programming**, including teacher programming within previously student-only programs and growth of the National Science Teaching Association Professional Learning Community of Practice.
- **Maintained program management systems covering 23 funded STEM outreach partners, 50 programs, and more than 800 program tasks**, with all partners participating consistently in check-in calls and remaining on track with only minor scope adjustments.
- **Developed national and regional hub-specific programming dashboards** to capture projected participation, support regional asset mapping, and identify potential differences between projected and reported participation.





GOAL 4:
Advance the efficiency and effectiveness of STEM education and workforce development programs, activities, and outreach through evaluation and assessment.

DSEC deploys a shared research and evaluation system that generates near-, mid-, and long-term evidence on participant outcomes, regional hub activities, consortium health, and alumni trajectories. These findings inform program refinement and strategic decision-making.

FINDINGS

1. **The shared evaluation approach produced evidence across participants, programs, regional hubs, and the consortium.**

   Evaluation data included annual administrative program data, participant outcome surveys, biannual social network data, and interviews with regional hub leads.

2. **The evaluation identified both positive participant outcomes and areas where evidence remains limited.**

   Findings documented increased STEM interest, confidence, career awareness, and career interest, although insufficient data limited conclusions for some high school and postsecondary outcomes.

3. **The Consortium Hub Health and Effectiveness Framework supported assessment of regional hub and consortium-level outcomes.**

   The framework incorporated social network surveys, interviews, artifacts, and aligned measures to examine progress and patterns of collaboration.

HIGHLIGHTS

- **Maintained and refined the administrative data collection system and launched the participant outcome survey system**, providing partners with interfaces to review administrative data and monitor survey submissions.
- **Developed tailored data collection plans with all 23 STEM outreach partners** and created 163 customized participant outcome surveys, including 136 student surveys, 24 educator surveys, and three mentor surveys.
- **Refined the Consortium Hub Health and Effectiveness Framework**, collected semiannual surveys, conducted interviews, reviewed artifacts, and finalized a consortium-level theory of action explaining how DSEC management, partners, and regional hubs work together toward shared goals.



GOAL 5:
Leverage the Consortium as a force multiplier to amplify the reach, visibility, and outcomes of DoW STEM.

DSEC strengthens alignment across consortium partners, regional hubs, STEM ecosystems, and outreach channels to scale promising practices, deepen community partnerships, and amplify DoW STEM's national visibility and impact.

FINDINGS

1. **Consortium connectivity remained consistent across the Base Period.**

   Social network analysis showed that interaction patterns established early in the first year continued into the second year, including total interactions, network density, average partner connections, and types of interaction.

2. **Regional hubs demonstrated a common set of outcomes despite operating in different local contexts.**

   Through participation in the DSEC consortium and regional ecosystem partnerships, the three hubs increased the number of identified STEM assets, developed partnerships that expanded STEM events and program offerings, connected with military stakeholders, and leveraged industry and DSEC partnerships to strengthen career-connected STEM programming.

3. **Consortium convenings were viewed as supporting this goal.**

   Across Base Period Year 2 quarterly meetings, 98% of responding attendees agreed or strongly agreed that the convenings would help their organizations leverage the network as a force multiplier.

HIGHLIGHTS

- **Sustained consortium-wide communication and resource sharing.** During Base Period Year 2, members made 100 posts in the DSEC Community group and accessed the group 1,491 times. Four informational modules were updated with revisions to more than 30 resources.

- **Connected approximately 120 DoW STEM professionals through the STEM Outreach Coordinator Community of Practice**, with 30 to 50 attendees joining each quarterly session. The community also developed a database of subject matter experts and scientists and technologists to support DSEC events and share information and resources.

- **Elevated DoW STEM visibility within the national STEM ecosystem** through participation in the 2025 STEM Ecosystems Convening and ongoing connections among regional ecosystems, DSEC partners, and DoW laboratories, sites, facilities, and outreach coordinators.

98% **of responding attendees agreed that the convenings help their organizations leverage the network as a force multiplier.**

CONCLUSION

During the Base Period, **DSEC expanded participation and strengthened STEM learning, teaching, and career awareness among students and educators.** Program, participant, and consortium-level evidence demonstrated progress toward DSEC's intended outcomes and provided a strong foundation for continued improvement. The partnerships, systems, and evidence established during the Base Period positions DSEC to refine implementation, expand impact, and continue advancing DoW STEM priorities in the Option Period.

The full report can be found at **dsec-reports.org**.

RTI INTERNATIONAL

This report was prepared for DoW STEM by RTI International under Cooperative Agreement W911NF2420110. RTI is an independent nonprofit research institute dedicated to improving the human condition. Our vision is to address the world's most critical problems with science-based solutions in pursuit of a better future.

AIR®

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