



TRANSITIONING VETERANS TO ENGINEERING RELATED CAREERS

NSF 2013 WORKSHOP FEBRUARY 25, 2013

**2013 NSF WORKSHOP:
TRANSITIONING VETERANS TO
ENGINEERING-RELATED CAREERS**

FEBRUARY 25, 2013

Washington, D.C.

Hosted by the American Society for Engineering Education



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EXECUTIVE SUMMARY

The transition from military service to a long and fulfilling career in engineering and related fields involves many players over a long period of time: service members, the military, educational institutions at all levels, and employers. Currently, a lack of information and a lack of direction result in missed opportunities. Identifying practical and realistic steps to take to close this gap was the purpose of the National Science Foundation (NSF) Veterans Workshop held February 25, 2013 in Washington, D.C., hosted by the American Society for Engineering Education.

There is no one-size-fits-all approach to engaging returning veterans in this field. But the summit made 15 recommendations, grouped by the four key tasks around which it was organized. **These are:**

1. Build early awareness of careers as engineering technicians, engineering technologists and engineers (ETETE) and the pathways that lead to them.

WHAT: Introduce service members to ETETE opportunities as early as possible.

WHO: Department of Defense and Veterans Administration, with private-sector input.

WHAT: Develop a national information network for self-development.

WHO: American Society for Engineering Education (ASEE), other engineering societies, AFCEA, National Defense Industrial Association.

WHAT: Build local consortia that draw together industry, colleges and universities and the military.

WHO: Veterans' coalitions; state departments of military affairs; state approving agencies, coordinated by the National Association of State Approving Agencies (NASAA); social media organizations.

WHAT: Disseminate information in a format veterans can easily understand.

WHO: NASAA, through its members; Student Veterans of America (SVA); current students, via social net working, with a leading social media company as sponsor.

2. Ensure academic recognition of service members' prior experience.

WHAT: Detail links between ETETE skills and military occupational specialties, and help educational institutions understand how military experience correlates to academic credit.

WHO: American Council on Education (ACE), plus colleges and universities; NASAA.

WHAT: Explore granting academic credit for industry-recognized certifications on the model of the Community College of the Air Force.

WHO: ACE, plus colleges and universities; NASAA.

WHAT: Encourage coops, internships, and research experiences that align skills with careers.

WHO: Academic institutions; industry; NSF.

WHAT: Offer more math and science courses on military bases, and foster early academic preparation through alternatives such as massive open online courses (MOOCs).

WHO: Community colleges and others; for MOOCs, institutions of higher education (because they need to recognize certificates of completion).

3. Define and propagate supportive academic environments.

WHAT: Establish one-on-one connections with veterans to create individual development plans that will maximize their chances for success.

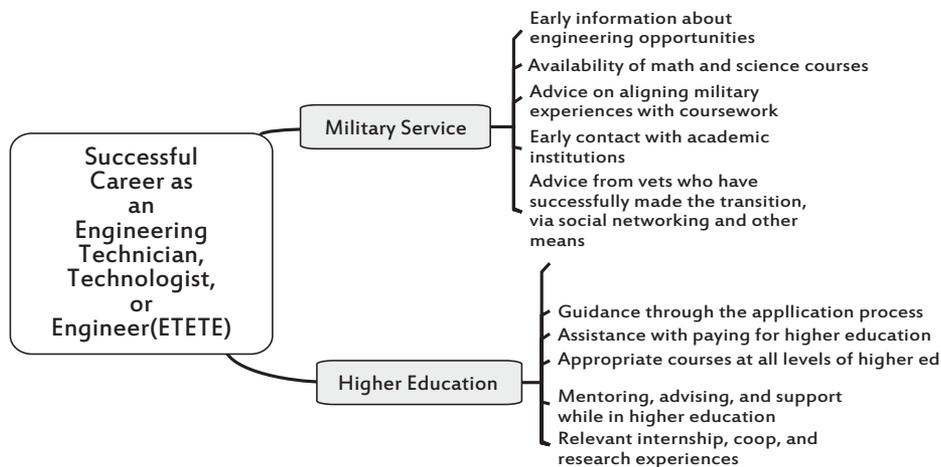
WHO: High-level administrators at colleges and universities; peer and community mentors.

WHAT: Create a national registry of campus offices of veterans' services.

WHO: Government agencies, via legislation if necessary; SVA; NASAA.

WHAT: Ensure military training officers are aware of ETETE degree requirements.

WHO: Educational institutions and Department of Defense transition officers.



WHAT: Encourage those in ETETE-related military specialties to pursue ETETE degrees.
WHO: Military training officers, with input from institutions of higher education.

4. Provide seamless support from government agencies, academic institutions and industry.

WHAT: Step in to take care of students' needs from Day 1.
WHO: Colleges and universities: student services, financial aid, enrollment and faculty.

WHAT: Eliminate problems caused by late benefits payments.
WHO: Student account services, or institutions of higher education by creating new endowments.

WHAT: Improve the tracking of veterans' education.
WHO: National Student Clearinghouse; NASAA. national levels.

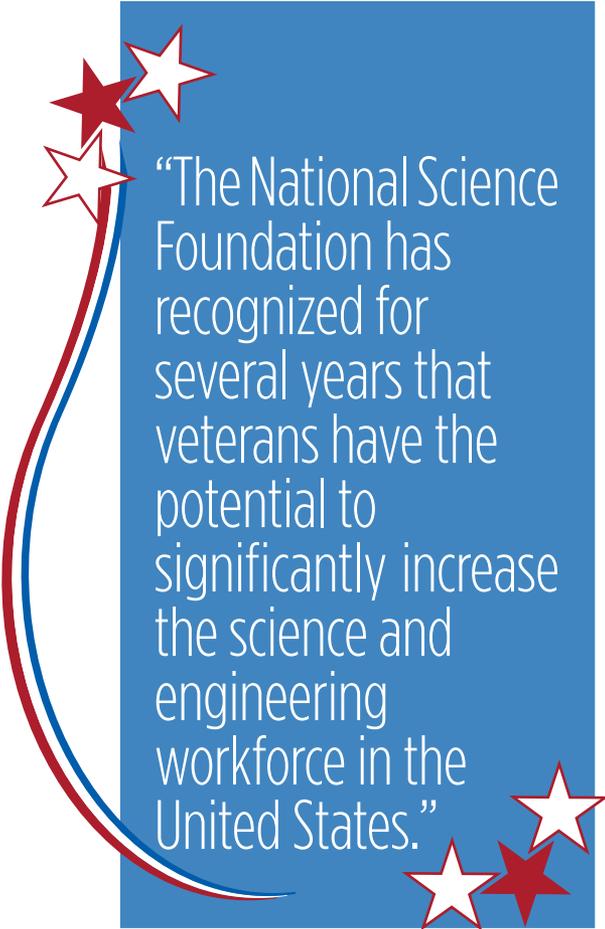
BACKGROUND AND PURPOSE OF THE CONFERENCE

The National Science Foundation has recognized for several years that veterans have the potential to significantly increase the science and engineering workforce in the United States. The post-9/11 G.I. Bill offers an avenue to higher education for veterans transitioning from active military service to civilian life, and at a time when the United States is short of qualified workers in science, technology, engineering and mathematics (STEM), the NSF is exploring ways to engage returning veterans in these fields. This includes encouraging them to enter institutions of higher education, from two-year colleges to graduate schools, and to graduate in ETETE disciplines as engineering technicians, engineering technologists or engineers.

The groundwork for this conference was laid in April 2009 at an NSF Engineering Education and Centers Division Workshop entitled "Veterans' Education for Engineering and Science," which called for an education and career development program to attract veterans into STEM careers. The focus of the 2013 conference described here was narrower, on ETETE, and its goal was the successful integration of returning veterans, both officers and enlisted, into ETETE careers.

With that in mind, this conference brought together high-level decision makers from the military, two- and four-year colleges and universities, and private industry to discuss strategies for advancing four key tasks identified in advance as necessary to achieving this goal. From its inception, the conference was forward-looking. The desired outcome was to reach agreement on realistic steps to be taken next. The four key tasks:

1. Build early awareness of ETETE careers and the pathways that lead to them.
2. Ensure academic recognition of service members' prior experience.
3. Define and propagate supportive academic environments.
4. Provide seamless support from government agencies, academic institutions and industry.



“The National Science Foundation has recognized for several years that veterans have the potential to significantly increase the science and engineering workforce in the United States.”

Beyond the focus of ETETE, the subject of veterans' education has drawn national attention recently, not all of it favorable. There has been considerable criticism of some for-profit institutions for taking veterans' G.I. Bill benefits without offering the support they need to transition successfully from the battlefield into higher education. In addition, military education was briefly a casualty of the sequestration debate in Washington in March when the U.S. Army, the U.S. Air Force, the U.S. Marines and the U.S. Coast Guard suspended applications for tuition assistance toward high school and college diplomas at accredited schools (the suspensions were withdrawn). On the bright side, the efforts of serving members of the armed forces to pursue their education on active duty and under the most adverse conditions were the subject of a sympathetic article in *The New York Times* in February.

MEETING FORMAT

About 60 people attended this meeting. They included military and civilian members of the armed forces, representatives of two- and four-year colleges and universities and graduate schools, representatives of professional associations, student associations and accrediting organizations, and recruiters and other personnel from Fortune 500 companies.

The core of the meeting was a series of four 90-minute breakout sessions organized around the key tasks. These were preceded by presentations and discussions of white papers summarizing issues raised by these tasks. For almost two hours at the conclusion of the conference, all participants met in plenary session to present recommendations arrived at during the breakouts, identify the most important, and reach agreement on who would do what and how it would be done.



The meeting was professionally facilitated. Several of the organizers were designated as “provocateurs,” whose role was to kick-start questions for the breakout sessions, oversee the general flow of those sessions, and make sure that a summary of each session’s recommendations was prepared for the afternoon plenary.

INTRODUCTORY SESSION

The backdrop to the opening session was a series of posters offering inspirational quotations, calls to action from the President’s Council of Advisors on Science and Technology and a top Veterans Administration official, and an invitation to participants to share their answers to some questions: Who are the players in transitioning veterans to engineering-related careers? What are some best practices? What are some immediate opportunities to enhance the transition? What are the obstacles? And what are some of the metrics for evaluation?

Norman L. Fortenberry, executive director, American Society for Engineering Education, offered a welcome. The charge to participants came from Theresa A. Maldonado, director of the Division of Engineering Education and Centers (EEC) of the Directorate for Engineering.

Maldonado said one outcome of the 2009 NSF veterans workshop was a determination to take a hard look at drawing veterans into science and engineering. As a result, several NSF programs have now reached out to veterans. Maldonado said a key challenge was to identify a framework of multiple pathways for veterans. The reason, she said, is that the military is a hodgepodge of cultures. Each branch of the armed services is different, officers and enlisted personnel present different issues, and veterans with disabilities face difficulties not encountered by those who returned without injury.

Finding these pathways was the task of the conference, Maldonado said, and she underlined the desired outcome: identifying specific actionable items and the parties responsible for seeing them through.

Maj. Gen. Michael R. Lehnert, USMC (ret.) spoke from two perspectives: as a Marine Corps veteran whose assignments included commanding general at the Marine Corps Boot Camp in Pendleton, Calif., and as a director of Student Veterans of America (SVA), dedicated to provide military veterans with the resources, support, and advocacy needed to succeed in higher education and beyond.

Lehnert said that while members of the armed forces are very intelligent – the all-volunteer military has high standards for enlistment – they are not necessarily smart about the options available to them in higher education. He outlined SVA’s work with returning veterans, saying it was paying off in high graduation rates, high grade-point averages and success in recruiting women into higher education, and said SVA highly encouraged veterans to enter STEM. “These are the men and women to lead America in the years to come,” he said.

WHITE PAPERS

Four white papers were circulated in advance of the conference, each addressing one of the key tasks. After each was presented during the opening session, the provocateur assigned to that task identified key questions to focus on.

1: Building awareness

White Paper 1: “Building Awareness of ETETE Careers, Pathways, and Academic Preparation for Service Members: Recommendations for Navigating Opportunities and Challenges.”

Authors: Corri Zoli, Ph.D., Assistant Research Professor, Institute for National Security and Counterterrorism, College of Law/Maxwell School of Citizenship & Public Affairs, Syracuse University; and Laura Steinberg, Ph.D., Dean, L.C. Smith College of Engineering & Computer Science; Professor, Civil & Environmental Engineering; Professor, Public Administration, Maxwell School of Citizenship & Public Affairs, Syracuse University.

When the Post 9/11 G.I. Bill became law in 2008, everyone guessed it might bring sweeping changes to veterans’ engagement with higher education, but no one could determine how far-reaching those might be. Would it result in a flood of veterans wanting to enter STEM? At the time of the 2009 NSF conference, no one had the answers.

At Syracuse, Zoli and Steinberg first set out to establish some numbers to frame this issue. About 2.4 million post-9/11 veterans and their families are eligible for education benefits. However, only about 920,000 have enrolled. Where, asked Steinberg, who presented their findings, are the others?

If overall data are hard to find, numbers are even harder to come by in ETETE and STEM disciplines. Steinberg estimated that roughly 500,000 G.I. Bill-eligible veterans,

including 100,000 officers, could potentially enter STEM. One caveat: Many more veterans responded to a survey saying they were interested in engineering education than actually engaged in it.

At the heart of Zoli and Steinberg's white paper was a series of five key findings: that universities are on the front lines of the transition process; that there is no "one size fits all" pathway for veterans in higher education; that the lack of STEM literacy nationwide and among service barriers is a barrier; that being in the military results in a professional self-efficiency that has lessons for universities; and that academic institutions and leaders must be more proactive in their response to service members as students.

Their 10 specific recommendations included improving data collection; developing transition models and customized programs, including ETETE; educating the Veterans Administration and other agencies about the resources available at colleges and universities; developing regional relationships with bases and VA centers for outreach and network support; tailoring degree-program modules to service members' expertise, and developing a national marketing campaign to explain why STEM degrees and careers are attractive to service members.

Response: Focusing the discussion, the provocateur assigned to the task of building awareness, Barry M. Horowitz, Ph.D.EE, Munster Professor of Systems and Information Engineering at the University of Virginia, spoke of his department's experience with an accelerated master's program in systems engineering for veterans. The program admits about a dozen veterans every year for a one-year master's degree; students meet Friday and Saturday of every other week.

His questions: When are the best times to make veterans aware of educational and career opportunities in ETETE? How do we get information to them? Which locations and which jobs within the military are most likely to yield veterans interested in STEM? What constitutes success? How do institutions tackle issues such as VA payment delays or base closures? What support structures can be put in place at both strategic and tactical levels?

2: Developing systems for academic recognition of military experience

White Paper 2: "Academic recognition of military experience."

Author: Meg Mitcham, Director, Veterans Programs, American Council on Education.

The American Council on Education is based in Washington, D.C. and represents the presidents of accredited U.S. degree-granting institutions, including both two- and four-year colleges and universities. Since 1945, it has held a contract with the Department of Defense to evaluate military training and experience. Every year, it evaluates hundreds of military courses and occupations for college credit recommendations to bridge the gap between military education and postsecondary curricula.

Mitcham's White Paper introduced the background to issues surrounding the transfer of credit and credit for prior learning, and detailed the basics of ACE's processes. It highlighted a couple of successful programs at community colleges: Clackamas Community College in Oregon, whose ability to map military training to its programs allowed it to build modularized courses for veterans and increase acceptance of credits for military training, and Fresno City College in California, which identified projected job openings and trained veterans for them. The White Paper recommended similar models for other colleges and universities.

It also laid out some of the barriers to acceptance of credit for military experience, including variances in military training among specialists holding similar titles in different branches; changes in training curricula from one year to the next; and the lack of college-style lab components for some science courses.

The White Paper also challenged some of the myths about the acceptance of military credit by institutions of higher education, a point Mitcham made strongly during her presentation of the paper. No, accepting credits for prior learning will not hurt a university's accreditation, she said. As for complaints about the quality of military education,



she conceded that it doesn't match academic education perfectly, but said ACE's job was to sign off on credit transfers only after careful evaluation. "Review, acceptance and evaluation are an individualized process," she said.

ACE's White Paper noted in conclusion that acceptance of credit for military experience can create an opportunity for a student veteran to complete a degree in a timely fashion.

Response: Focusing the discussion, the provocateur assigned to the task of building awareness, William Kelly, Ph.D., P.E., Director of External Affairs for the American Society for Engineering Education, asked participants in the upcoming breakout session to identify the barriers to recognizing service members' prior military experience in all three ETETE areas, for technicians, technologists, and engineers – and to consider whether the pathways might be different in each case.

He asked what educational institutions and bodies such as ACE and ABET (formerly the Accreditation Board for Engineering and Technology) could do to lower the barriers, and how their work could be shared with the military. He raised the question as to whether industry-recognized certifications could play a part, and asked which agencies and organizations needed to be brought together to make this happen.

3: Supportive academic environments

White Paper 3: "Defining and Propagating the Characteristics of Academic Environments that are Supportive of Engineering and Technical Study by Service Members."

Authors: David Hayhurst, Ph.D., Dean, San Diego State University College of Engineering, and Patricia Reily, Ed.D., Director, SERVICE (Success in Engineering for Recent Veterans through Internship and Career Experience), San Diego State University College of Engineering.

With 1,200 veterans on campus, of whom 150 are pursuing bachelor of science degrees in engineering, San Diego State University is a leader in transitioning veterans into ETETE careers – a distinction that was recognized frequently during the conference breakout sessions. Part of this is due to location; San Diego County is a national defense hub and the No. 1 destination for veterans returning from Iraq and Afghanistan. But San Diego State has also gone out of its way to welcome veterans and help them make the most of educational and career opportunities. Its current vice president for student affairs is a veteran.

At the heart of SDSU's efforts is a well-staffed, centrally located veterans center that helps students process their veterans education benefits and troubleshoot problems such as late tuition payments. The center is complemented by the only Veterans House in the nation, a 20-apartment house on Fraternity Row that serves as a social hub. A highly qualified military liaison officer serves as the point of contact and liaison with the admissions office for veterans and their family members applying to the university.

New student veterans attend an orientation seminar and transition class that address resources available on campus and in the local community. Paid internships and new graduate positions provide veterans in engineering courses with a clear path to successful careers; at the time the White Paper was written, the SERVICE program (Success in Engineering for Recent Veterans through Internship and Career Experience) had placed all 59 students who wanted a paid intern-

ship or new graduate position.

The White Paper noted several barriers to success, including financial pressures (particularly for married students) and the inflexibility of class sequences in some STEM fields. It also called for better efforts to translate military experience into language that civilian employers understand – the problem discussed in the previous White Paper.

It recommended hiring the right people to work with veterans and active duty service members to make sure their point of view was understood, and noted what it described as an unintentional institutional bias in the military against pursuing STEM education because of the pressures within the armed services to obtain a degree to help with promotion. The reason: The route to STEM associate and baccalaureate degrees is often slower than the path to degrees in nontechnical areas such as sociology or business administration.



"The challenge is to bring together the strengths of college and university programs and the strengths of veteran students to achieve success."

The White Paper concluded by calling for third parties to follow SDSU's example and hold veterans' hands through the transition to higher education and on to successful careers.

Response: The provocateur assigned to the task of creating supporting academic environments for transitioning veterans was Skip Gebhart, Director, Veterans Education & Training Programs for the West Virginia Higher Education Policy Commission and Legislative Director, National Association of State Approving Agencies for Veterans Education & Training.

Gebhart defined the issue as one of student success – of creating the kind of place where students feel supported, are engaged and succeed; and of becoming aware of and responsive to students; academic needs, desires, and challenges. What does this success look like? he asked.

Colleges and universities, said Gebhart, need to ask several questions. How do they want their students to change and how do they help them embrace that change? What barriers are they raising, and how can they change to remove them?

Gebhart pointed out that veteran students have experiences that make them better, harder-working students than many of their peers. They are used to structure and accustomed to setting objectives quickly, and they are accustomed to working in teams. The challenge, he said, is to bring together the strengths of college and university programs and the strengths of veteran students to achieve success. His point was echoed after the presentation of the White



“Service members need early access to information about ETETE courses and careers. To some extent this will always come through the Department of Defense, via military education officers.”

Paper by a fellow provocateur, Rory A. Cooper, Ph.D., Distinguished Professor and FISA – Paralyzed Veterans of America Chair, University of Pittsburgh, who said that whatever apprehensions there on the part of service members “transitioning” from the military to the Veterans Administration – and therefore qualifying for education benefits – the relationship between the two could better be viewed as a lifelong “partnership.”

4: Providing seamless support for service members and their dependents

White Paper 4: “Providing Seamless Administrative Support to Servicemembers, Veterans, and their Dependents by Government Agencies and Higher Education Institutions: Opportunities for Collaborative Approaches.”

Author: Lesley McBain, M.S., Consultant, American Association of State Colleges and Universities, and Ph.D. Student, Higher Education and Organizational Change Division, Graduate School of Education and Information Science, University of California, Los Angeles.

The fourth White Paper highlighted several issues in helping service members and their dependents make the transition to higher education. The first was the culture clash between the command-and-control approach of the military – shared, the paper noted, by much of industry – and the “organized anarchy” of institutions of higher education. Transitioning veterans need help bridging this gap.

The second was the lack of tracking data for veterans entering higher education, particularly around retention and graduation rates. The paper welcomed the recent agreement between the Veterans Administration and the National Student Clearinghouse, facilitated by the Student Veterans of America, to provide the clearinghouse with data on up to one million veterans who have received Montgomery G.I. Bill and Post-9/11 G.I. Bill benefits for attendance at two- and four-year institutions.

The third was the complex payment process for Post-9/11 G.I. Bill benefits. The White Paper saw little reason to revert to the practice of the Montgomery G.I. Bill – sending benefit checks for education directly to veterans – but pointed out that the new system leaves colleges and universities carrying unpaid student accounts for lengthy periods.

The paper called for a nimble, collaborative approach to helping students and their dependents.

Response: The provocateur assigned to the task of providing seamless support for service members and their dependents was Rory A. Cooper, Ph.D., Distinguished Professor and FISA – Paralyzed Veterans of America Chair, University of Pittsburgh.

Cooper focused his response on five barriers: lack of tools

that veterans need to make the right choices and succeed in civilian careers; lack of knowledge about the benefits they have earned; a lack of understanding of veterans’ needs on the part of colleges and universities; a lack of assistance in understanding STEM paths; and the lifestyle changes that occur in a family when one of the breadwinners goes to college.

Asking how universities can help veterans learn about their benefits, he identified the first semester as critical. Discussing the importance of making good choices, he noted that some veterans who are not ready to plunge into engineering may be good candidates for engineering technology. He praised internships and service learning.

Cooper asked colleges and universities to think about how they could help with insurance, child care and spousal employment, and with connecting veterans with VA medical care. He appealed for creative ways to overcome summer gaps in student income, and to sensitize institutions of higher education to the very different culture in which service members are steeped.

Adding to the response to the paper during the session itself, fellow provocateur Skip Gebhart (above) made the point that while student veterans are used to structure and the chain of command and not to the unstructured environment of a campus, they come with several pluses as students, such as the fact that they are accustomed to working in teams – a structure many college courses use.

BREAKOUT SESSIONS

Four breakout sessions formed the core of the conference, two before lunch and two after, allowing almost 30 participants to brainstorm at each. The provocateurs framed the issues. On Task 3, for example, supportive academic environments, Skip Gebhart asked what were the strategic right things to do on college and university campuses, and what could create an environment that would help students succeed. The participants then split into working groups before reporting back, at which point the session arrived at key recommendations for its summary statement. Throughout, the emphasis was twofold: figuring out what needed to be done and deciding who was best placed to do it.

Because of the need to identify practical next steps, agreement on any single recommendation often spurred a plethora of suggestions from different perspectives. There was general agreement, for example, that it was critical for colleges and universities to establish an individual connection with every student. But what would an individual development plan look like? What was available? For example, could internships be arranged? How would the plan be maintained? On the administrative side, where did responsibility fall? On the provost, perhaps? By the end of the session, the discussion of task 3 had

ranged from creating a national office of student services to trying to align military education with university needs. These issues broadened the circle of responsibility beyond institutions of higher education to the Veterans Administration, the Department of Defense, other government agencies, nongovernmental associations and private employers.

Discussions in other breakout sessions followed a similar path. The session on task 1, for example – building awareness – suggested creating a self-growing, self-improving information network for veterans, in part through social media, and discussed how to build more regional consortia of major hirers, military bases and colleges and universities.

SUMMARY STATEMENTS

The provocateurs presented a summary of each session's recommendations in a plenary session, as follows:

Task 1: Building awareness

Service members need early access to information about ETETE courses and careers. To some extent this will always come through the Department of Defense, via military education officers. But the session recommended using social media as a way to spread the word in an informative, user-friendly, peer-to-peer way, and suggested asking Twitter, Google or Facebook to sign on as a sponsor. The session identified ASEE as a central point for organizing information from institutions of higher education and from industry, but saw student veterans as key in spreading information to their peers. The efforts of colleges and universities could be reinforced if states' departments of education and veterans affairs committed to helping them engage student veterans. Private industry could help, and so could professional associations.

Task 2: Developing systems for academic

recognition of military experience

This breakout session recommended identifying exemplars of two- and four-year colleges that are doing well at helping veterans make the transition to ETETE. It suggested several key players to help accomplish this: Student Veterans of America; the White House (given its commitment to increasing the number of U.S. engineers); and the National Association of State Approving Agencies (NASAA). The session also recommended identifying examples of good industry partnerships, citing the efforts of Central Piedmont Community College as an example.

Citing the need for staff in colleges and universities to understand how ACE works, the session recommended that institutions put structures in place to train them. It also saw a need for recruiting a steady supply of evaluators for ACE, suggesting ASEE's Engineering Deans and Engineering Technology councils as sources. And it suggested creating a program for knowledge and competency testing and assessment.

As a practical step, the session suggested creating modules or an entire online course in ETETE that would allow service members to incorporate their military training into it, drawing on the resources of all of the institutions represented at the conference. It suggested that the ASEE councils could work with the Department of Defense to increase a common understanding of the transferability of military education for college admission. And it encouraged institutions of higher education to work with industry to create coop programs for veteran students.

Task 3: Supportive academic environments

The session had four key recommendations:

- Establish individual connections with student veterans – the responsibility primarily of high-level academic administrators such as provosts.
- Establish a national registry of campus offices of veterans services, a task that could be accomplished by institutions and organizations represented at the



conference, with help from government agencies and legislation.

- Provide alignment between military training officers and universities and colleges so that service members and their commands understand ETETE degree requirements. That task would require cooperation by several parties.
- Encourage and raise awareness of STEM programs among service members through a cooperative effort involving the military and colleges and universities.

Task 4: Providing seamless support to service members and their dependents

This breakout session said communicating with student veterans and validating their experience on Day 1 was critical. That meant tackling any problems with VA support systems and financial aid. It saw vice presidents for student services as key. On a related issue, dealing with a lag in benefits between the start of a semester and the VA's payment to the institution, it recommended involving student account services and backing up any efforts on the part of the institution itself by partnering with the development office to establish an endowment fund.

It recommended that the Association of Public Land-grant Universities, ACE and the American Association of State Colleges and Universities (ASCU) convene a meeting with White House assistance to improve the Veterans Administration's reimbursement data and tracking system.

It suggested an S-STEM program for veterans within NSF.

It asked federal agencies and institutions of higher education to improve communication with each other and appealed for both to help with the data that the National Clearinghouse is newly authorized to gather.

It suggested that the Department of Defense consider natural linkages when encouraging service members to sign up for education to increase their chances of promotion, such as suggesting that electricians consider electrical engineering courses.

In general remarks after the summary statement were presented, there was a call to remember that the National Guard had a role in the debate as well, a point not previously raised in general session.

CONFERENCE RECOMMENDATIONS

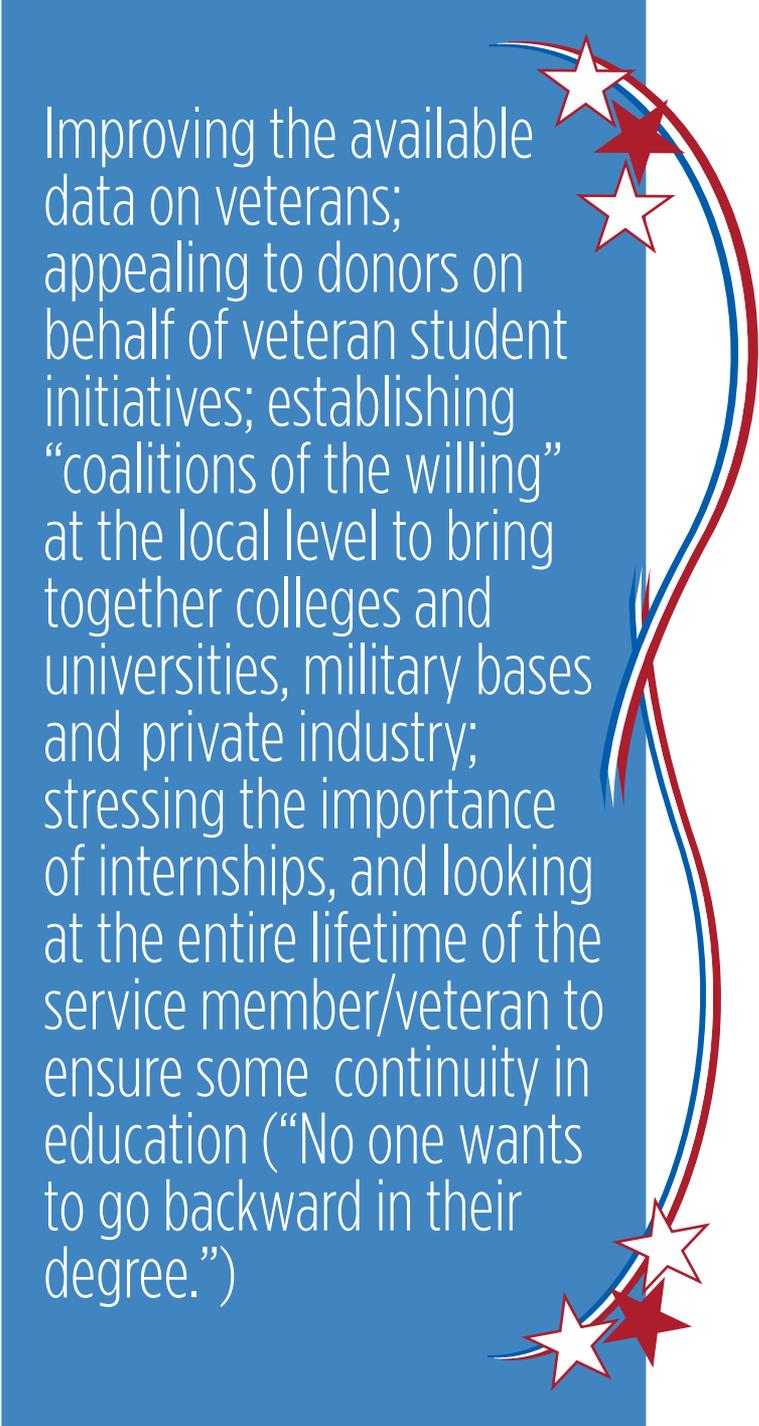
As the conference moved into discussing immediate next steps, there was a call to action that went beyond the recommendations listed in this report: a request that "each of us tell a story," that conference participants use personal connections to further the tasks at hand.

This spurred several attendees to offer to work through their own organizations to accomplish this. General Lehnert, for example, saw Student Veterans of America as well placed to leverage its connections to bring about change, and Rory Cooper, one of the provocateurs, offered to reach out to the NSF's Engineering Research Centers. There was a groundswell in favor of forming a consortium among two-year colleges to promote veterans education in ETETE, through conferences and other

means.

Discussions also returned to key topics from the summary statements, some of which crossed the narrow boundaries of any one particular task. These including improving the available data on veterans; appealing to donors on behalf of veteran student initiatives; establishing "coalitions of the willing" at the local level to bring together colleges and universities, military bases and private industry; stressing the importance of internships, and looking at the entire lifetime of the service member/veteran to ensure some continuity in education ("No one wants to go backward in their degree" was one comment).

The summit recognized that there is no one-size-fits-all approach to engaging returning veterans in ETETE. But it made fifteen recommendations, grouped according to the four key tasks around which it was organized. These are:



Improving the available data on veterans; appealing to donors on behalf of veteran student initiatives; establishing "coalitions of the willing" at the local level to bring together colleges and universities, military bases and private industry; stressing the importance of internships, and looking at the entire lifetime of the service member/veteran to ensure some continuity in education ("No one wants to go backward in their degree.")

1. Build early awareness of careers as engineering technicians, engineering technologists and engineers (ETETE) and the pathways that lead to them.

- WHAT: Introduce service members to ETETE opportunities as early as possible.
- WHO: Department of Defense and Veterans Administration, with private-sector input.
- WHAT: Develop a national information network for self-development.
- WHO: American Society for Engineering Education (ASEE), other engineering societies, AFCEA, National Defense Industrial Association.
- WHAT: Build local consortia that draw together industry, colleges and universities and the military.
- WHO: Veterans' coalitions; state departments of military affairs; state approving agencies, coordinated by the National Association of State Approving Agencies (NASAA); social media organizations.
- WHAT: Disseminate information in a format veterans can easily understand.
- WHO: NASAA, through its members; Student Veterans of America (SVA); current students, via social networking, with a leading social media company as sponsor.

2. Ensure academic recognition of service members' prior experience.

- WHAT: Detail links between ETETE skills and military occupational specialties, and help educational institutions understand how military experience correlates to academic credit.
- WHO: American Council on Education (ACE), plus colleges and universities; NASAA.
- WHAT: Explore granting academic credit for industry-recognized certifications on the model of the Community College of the Air Force.
- WHO: ACE, plus colleges and universities; NASAA.
- WHAT: Encourage coops, internships, and research experiences that align skills with careers.
- WHO: Academic institutions; industry; NSF.
- WHAT: Offer more math and science courses on military bases, and foster early academic preparation through alternatives such as massive open online courses (MOOCs).
- WHO: Community colleges and others; for MOOCs, institutions of higher education (because they need to recognize certificates of completion).

3. Define and propagate supportive academic environments.

- WHAT: Establish one-on-one connections with veterans to create individual development plans that will maximize their chances for success.
- WHO: High-level administrators at colleges and universities; peer and community mentors.



- WHAT: Create a national registry of campus offices of veterans' services.
- WHO: Government agencies, via legislation if necessary; SVA; NASAA.
- WHAT: Ensure military training officers are aware of ETETE degree requirements.
- WHO: Educational institutions and Department of Defense transition officers.
- WHAT: Encourage those in ETETE-related military specialties to pursue ETETE degrees.
- WHO: Military training officers, with input from institutions of higher education.

4. Provide seamless support from government agencies, academic institutions and industry.

- WHAT: Step in to take care of students' needs from Day 1.
- WHO: Colleges and universities: student services, financial aid, enrollment and faculty.
- WHAT: Eliminate problems caused by late benefits payments.
- WHO: Student account services, or institutions of higher education by creating new endowments.
- WHAT: Improve the tracking of veterans' education.
- WHO: National Student Clearinghouse; NASAA.



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STEM2VETERANS

BRIGMAN, BILL

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STEPANEK, LAURIE
NATIONAL SCIENCE
FOUNDATION

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KELLY, BILL

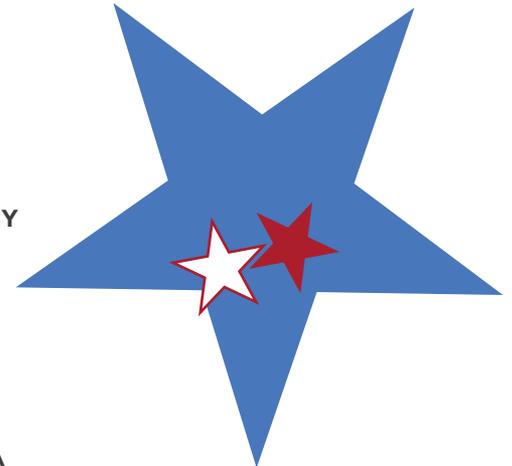
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