EDC Education Development Center

Women Veterans in STEM

Strengthening the Pipeline from Service to STEM

A series focusing on the future of Women Veterans in STEM

Health & Well-being | Transition Services | STEM Education | Women Veterans | STEM Workforce

ARTICLE 4 of 5

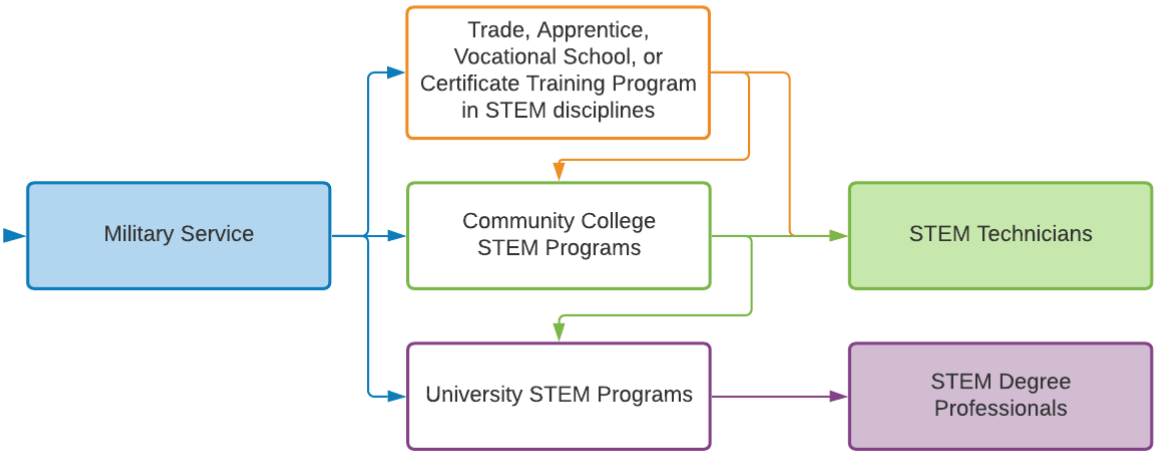
This paper was developed as part of a National Science Foundation-funded project seeking to improve participation by women veterans in the STEM workforce. It is the first of five papers aimed at providing a snapshot of what is currently known about women veterans' participation in the STEM workforce, factors that affect their participation, and promising practices to increase participation and success in these fields. A convening in early 2021 will bring together key stakeholders to discuss the implications of these findings and how to best strengthen and scale the impact of existing initiatives to support women veterans' success.

STEM Education Pathways for Women Veterans

What are the education pathways into STEM for women veterans?

Women veterans can access STEM education in a variety of ways.

All military veterans have several available pathways to higher education, which are shown in the figure below. Veterans can enter these STEM pathways at any time before, during, or after their military service. Most start with a high school diploma or equivalent, but then may diverge in several ways.



The first option, at the top of the figure, is for veterans to enter an apprenticeship or vocational school, or to earn a relevant certificate before entering the STEM workforce. Another possibility is to pursue a two-year community college degree, either directly after completing high school or following vocational training. Attending a university or college in order to obtain a four-year degree in a STEM-related subject is another option, although placement exams may be required prior to enrollment, and preparing for these exams is an additional challenge for some veterans. Credentialing is also an option, either before or during STEM employment; candidates can seek industry-recognized certifications through organizational partners, such as the Society of American Military Engineers (SAME). And, as the figure suggests, there can be some movement among pathways as veterans prepare to enter the STEM workforce.

The Post-9/11 GI Bill is a key resource that over two million veterans and their dependents have utilized since its inception. The Bill provides financial support for veterans who have served in the military on or after September 11, 2001. The Bill covers tuition and fees for undergraduate and graduate degrees, technical or vocational training, on-the-job-training, entrepreneurial training, as well as other costs associated with schooling, such as money for housing or relocation and books and supplies. Veterans' eligibility for funds is based on the amount of time served in the military.[1] In 2019, the Forever GI Bill STEM Extension was passed, extending education benefits for up to 9 months or $30,000 for veteran students pursuing STEM degrees. Training in these fields often requires more credit hours than in other degree programs, and the extension provides support for this additional training through the Edith Nourse Rogers STEM Scholarship.[2]

How and when do women veterans develop a STEM identity?

There have been few studies of STEM interest and identity development in women veterans.

It's not surprising that researchers who study social cognitive career theory (SCCT) have found that learning experiences that build a person's confidence in their ability to perform specific tasks—self-efficacy—increase their interest so that they (1) choose certain goals that (2) lead to actions that (3) result in better performance and attainment in a desired career field. One study of a small sample of women veterans examined the development of their interest in STEM fields from their pre-military, military, and post-military experiences.[3] Their self-efficacy was boosted by their experiences and by the encouragement they received from supervisors, coworkers, and faculty who observed their potential. Another study found that military occupational specialty (MOS) influenced veterans choices and supported their academic experiences, although participants' gender wasn't specifically examined.[4]

Only a few studies of women veterans have investigated their experiences of STEM identity;[4] some simply investigated the intersections of gender and veteran identity,[5] or of relationships among gender, veteran identity, and college engagement.[6] Few women combat veterans have been studied, and only their general experiences at the community college level have been explored.[7] Engineering has been explored as a path to civilian reintegration for veterans,[8] but that study was conducted at an institution that had *no* women veterans in the engineering program. Without much data on the educational experiences of women veterans, it is difficult to support the development of their STEM identity.

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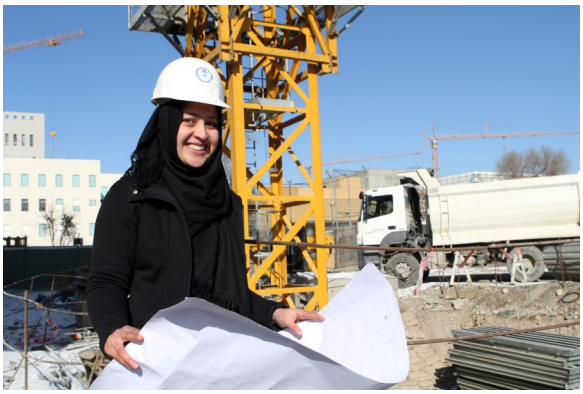

What ongoing support is required to retain women veterans pursuing STEM degrees?

The first step is to learn who women veterans are.

Women are the fastest growing population for both military and veterans, according to the U.S. Department of Veterans Affairs. But women still may be seen as an "invisible minority"—meaning they often have to self-disclose their veteran status. It is important to know who our women veterans are, in order to provide programming for their STEM recruiting efforts.

While there are some programs tailored to women in STEM, few have been created specifically to help retain women veterans.[9, 10, 11] Some campuses provide women-veteran–specific programming, such as groups that are tailored to supporting the stated needs of women veterans and have a focus on diversity and inclusion. Many women report using campus veteran resource centers when they are available, but fewer than 15% are involved in social groups.[12] In general, programs designed to help increase STEM retention are focused on the greater population of students or on women generally. There is a need to adapt such programs to the requirements of women veterans, since they can have specific issues that may affect their retention in STEM.

What services are available to aid women veterans moving from STEM education into the workforce?

There is a growing number of such services, as the presence of women veterans pursuing STEM education becomes more widely recognized.

Mentoring
From Facebook to LinkedIn to membership organizations, women veterans can access communities of peers who can provide mentoring and career advice as they navigate new job markets. Mentoring by a seasoned employee can give new or transitioning women veterans confidence and motivation when working in unfamiliar jobs.

Licensing and Credentialing
Licenses and credentials can help women veterans gain the knowledge, skills, and aptitudes necessary to be competitive in the STEM job market, without committing to the time or expense of degree programs. Many technical societies establish partnerships with licensing/credentialing organizations to provide discounts or reimbursements of exam fees to veterans.

The Department of Defense maintains a Credentialing Opportunities Online (COOL) portal that highlights credentials that can help veterans in their career development while in uniform or after they transition to the private sector. To learn more about COOL, visit Military One Source.

Employer-Based Training
Companies understand that they have to go to the workforce rather than waiting for the workforce to come to them. Women veterans who are studying at colleges, universities, and technical schools can connect with employers when those organizations visit to recruit the people they need. But according to Vince Bowen, executive director for the Energy Systems Technology and Education Center at Idaho State University, "One of the things that is going to make this difficult are the changes to Title IX. We are no longer allowed to have special gender, race, or ethnicity programs. We will have to go to a Vets program to capture female Vets."

Individual firms also have established on-the-job training programs or internships to engage veterans as they separate from service. By investing in training and professional development, companies ensure they get personnel with the exact skills they require.

In Summary

These findings will provoke national dialogue on the importance of policies and programs to support women veterans in seeking greater economic opportunities through STEM work. We can leverage the unique expertise of these individuals only by providing the additional support they need to be able to successfully join the STEM workforce. While such support exists in isolated pockets and instances, it is critical that our nation create opportunities for all female veterans. We seek to bring key stakeholders together for this timely and critical discussion, and invite those who are interested to join us.

For more information about the project, check out our website **womenvetsstem.edc.org**

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