

Institutional Agents' Roles in Serving Student Veterans and Implications for Student Veterans in Engineering

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Abstract

As the number of student veterans and service members increases, universities are creating new programs or expanding existing programs to better serve the needs of this student population. In many cases, faculty and staff have become actively involved in advocating for student veterans and serving as allies for their success.

Our qualitative study on student veterans in engineering (SVEs) included in-depth interviews of institutional agents (IAs) at our four academic institutions. We interviewed 24 individuals in Fall 2014 and Spring 2015; interviews lasted between 30 and 90 minutes. Interviewees worked in a variety of settings across campus, including financial aid and health services. We also interviewed a First-Year Engineering (FYE) staff member.

To better understand the broader context of SVEs' educational experiences beyond departments of engineering, we explore the IAs' perspectives on their duties in serving student veterans and their suggestions for improving policies and programs, both at the university level and within engineering. We also examine some implications of these perspectives for engineering education. We focus this study on two research questions:

1. How do IAs describe their roles and responsibilities as they pertain to student veterans in general?
2. What are IAs' experiences in working with student veterans in engineering?

Our study highlights how IAs effect positive change for student veterans and help SVEs navigate the transition from the military to university structures and cultures. The IAs felt they played an instrumental role in expanding services for student veterans and in establishing a positive and supportive culture for student veterans. However, they also recognized the need for additional resources for, and improvement in, certain policies and programs. The results can inform university and departmental efforts to enhance SVEs' transitions from the military to higher education and engineering studies.

Introduction

Given that nearly all institutions of higher education in the United States serve student veterans in some capacity [1], it is important to understand the factors that contribute to, or impede, their success in college. University personnel often enhance student veterans' ability to make a smooth transition to college and to ultimately succeed in their educational endeavors. In many cases, some of these representatives (e.g., Admissions, Financial Aid) are student veterans' first point-of-contact with the university, sometimes before these students even arrive on campus. A recent survey found that "personal contact with individuals from college or university" was the second most valuable source of information for veterans entering higher education, following "government websites, VA network, and online resources (GI Bill website)" [2].

In an earlier paper [3], we described the institutional environment for student veterans in engineering, providing preliminary results from interviews with institutional agents (IAs) and from our analysis of institutional websites. We found that serving veterans was an area of increasing importance at our study institutions and that the level of services offered is evolving to include veterans' resource centers, training for students and faculty on veterans' issues, and web portals to access veteran-specific information.

This paper provides insights into perspectives of IAs about their role in serving student veterans and their suggestions for improving student veteran services and programs. We then provide additional information about the relevance of these perceptions for engineering education. We anticipate that the results can help colleges and departments of engineering to identify ways to improve communication and encourage collaboration with individuals outside their institutional unit who serve student veterans.

Background

Encouraging Student Veterans Programs and Policies

Student veterans often experience a variety of challenges when transitioning from the military to higher education. Our prior work indicates that student veterans find it challenging to interact with traditional college students, especially for group work [4]. As a result of years away from formal education, veterans often struggle with math difficulties and a lack of study skills [5]. Some veterans contrast civilian life with military life and suggest that college life is a "culture shock" for new veterans [6].

Universities have initiated a wide variety of efforts to address these and other challenges and to more effectively meet student veteran needs [7], [8]. Many campuses offer Green Zone training to faculty and staff, which provides in-depth information about the issues faced by active service members, student veterans, and their families [9]. Student veterans organizations are often viewed as an essential element of "veteran-friendly" campuses [10]. Many of these programs "include and incorporate student veterans more into the university fabric through admission, academics, student organizations, and extra-curricular activities" [1, p. 1]. Many of these institutions have been designated as "veteran friendly" by organizations such as College Choice's "Best Colleges for Veterans" [11], Best Value Schools' "Military-Friendly Colleges" [12], and G.I. Jobs' [13] "Sponsored Schools that Want to Educate You." These initiatives often highlight the institutional characteristics that contribute to student veteran success. For example, College Choice recognizes that the best colleges establish "*a vet-friendly culture at their school, which only happens through a holistic approach that engages the administrators, the student body, veterans, service members, and of course their families*" [11, emphasis in original].

Research indicates these programs often have a positive impact on student veterans' educational experiences and outcomes [14], [15]. Persky and Oliver's [16] study of student veterans attending community colleges identified characteristics of successful programs: (a) credit streamlining; (b) streamlining of programs and services; and (c) faculty, advisor, and counselor training (p. 113). Caton's [17] study of student veterans services at a community college found it takes an average of six years to fully develop student veteran programs; those programs that became a part of the fabric of the institution had support from the highest level of university

administration and leadership, and the most successful programs used a student-centered approach, focusing on student veteran assets.

However, Sandground [18] found that university services for student veteran programs can be sporadic and lacking a coherent approach. Many of these services, such as Veterans Administration (VA) benefits programs, emphasized administrative support, with relatively fewer programs focusing on counseling, advocacy and development of the student veteran. Sponsler et al. [19] found that many university-level programs did not have access to the data they needed to understand the efficacy of student veteran programs.

Kim and Cole's [20] study showed mixed results in student veterans' perceptions of the support they receive from institutional agents. Forty-six percent of student veterans and service members said they feel supported by and have a sense of belonging with administrative personnel, versus 36% of non-veteran/civilian students. However, a recent Gallup poll indicated that only 30% of military service members and veterans strongly agreed that their institutions of higher education understood their needs [21]. Wild and Mahapatra's [22] study of a university's readiness to support student veterans revealed that while the university was supportive of these students' needs, there was a need for a centralized online resource and additional faculty and staff training about student veterans. In the absence of these and other features, student veterans may become frustrated, as they are handed off among various university personnel when trying to access help [23]. As military experience has been shown to result in "greater loyalty and commitment to one's education as well as one's affiliated academic institution" [1, p. 3], it is essential to better understand how university personnel perceive their duties as related to student veterans.

Student Veterans in Engineering

Recent research suggests that students who have military experience are a good match for engineering programs of study [24]. In particular, student veterans' high level of maturity and motivation and their unique military experiences are relevant to engineering education. Many student veterans have had military-related leadership experiences, which strengthen their potential for success in engineering studies, including the teamwork that is often required. Between August 2009 and December 2013, slightly more than 18,000 student veterans used their Post 9/11 GI Bill benefits to earn an engineering or engineer-related degree [25]. Lim and colleagues [26] revealed that "student veterans saw engineering as a bridge that connected their prior military work and their post-military professional aspirations" (p. 10). As such, engineering is a "successful transition pathway" into higher education and beyond [26, p. 13]. The US government has recognized the potential for student veterans to contribute to engineering labor force, introducing legislation to encourage veterans to major in Science, Technology, Engineering, and Math (STEM) fields [27].

Many departments of engineering recognize the assets that SVEs' bring to their engineering studies. The establishment of the Military and Veterans division within the American Society of Engineering Education (ASEE) affirms the growing interest in student veterans in engineering. Prior work describes the various pathways from the military to engineering education [28] and indicates that leadership skills and experiences acquired in the military play an important role in the academic experiences and success of SVEs [29], [30]. SVEs are able to utilize unique

military-based problem-solving skills to succeed in variety of engineering classes, including capstone courses [31]. This paper provides insights into the broader institutional environment that shapes SVEs' experiences, as the university environment and ecology ultimately shape student outcomes [32], [33]. Additional knowledge about the broader context of their experiences, and the people across campus who serve student veterans, can strengthen engineering education.

Methods and Data Analysis

Our qualitative study was conducted at four institutions that have witnessed increased outreach, programs and services to student veterans in the past five years. To develop a more comprehensive understanding of institutional agents' views of student veterans, we sought to interview individuals from a variety of student affairs units within each institution. We used our professional networks and snowball sampling [34, p. 237] to identify IAs who serve student veterans in some capacity.

We interviewed 24 IAs at our four study institutions. All of these individuals indicated that they work or interact with student veterans in some capacity. At all four institutions, we interviewed the VA Certifying Official; these individuals generally have the most direct contact with student veterans, as they are responsible for certifying student veteran benefits. Other interviewees included: university staff supporting veterans in student success centers, administrators responsible for diversity, Student Veterans Association (SVA) officers and advisors, financial aid personnel, admissions officials, disability services staff, engineering staff, student affairs representatives, counseling center personnel, leaders of associations, groups, and research centers for student veterans, veteran services coordinators, and advocates working in positions not directly tied to student veteran programs (e.g., a Student Affairs graduate student veteran and a retired military officer serving as an Academic Advisor). We also interviewed a First-Year Engineering (FYE) staff member. Fourteen of the 24 IA's interviewed had some sort of military connection themselves, including serving in the military or having family members who served in the military.

The interview guide included questions about the participants' jobs and responsibilities; covered policies and programs in place to serve student veterans; perceptions of best-practices for student veterans; and strengths and gaps in provision of student veteran services. Throughout each interview, follow-up questions were tailored to the IA's position. The study was approved by the Institutional Review Boards at our partner campuses.

We utilized Strauss and Corbin's [35] three-step strategy for analyzing the in-depth interview transcripts, engaging in (1) open coding (identifying key themes related to our research goals); (2) axial coding (categorizing these initial themes into the broader themes as they related to the perspectives of the IAs); and (3) selective coding (connecting these latter categories with one another and identifying subcategories within each). A matrix was then created to allow for comparisons across the various themes related to institutional agents' perspectives [36]. To protect the participants' confidentiality, we identify them below by their general area of responsibility such as "Student Success" or "Certifying Official." Exact quotes from participants are italicized below.

Results

Research Question # 1: How do IAs describe their roles and responsibilities as they pertain to student veterans in general?

Interviewees described a variety of tasks and roles related to serving student veterans. These responsibilities are both transactional (i.e., task-oriented and related to pragmatic and programmatic concerns) and relational (i.e., focused on forming relationships and enhancing students' engagement with the university).

Ensuring student veterans understand and receive their educational benefits

Some IAs interviewed describe their roles in serving student veterans, especially advocating for their needs. These individuals “*connect the dots*” and “*help cut through the red tape...for the benefits they've earned while on active duty...and point them toward resources*” (Certifying Official). The process for providing student veterans with VA educational benefits is complex, as the law has many chapters and provisions. In order to receive benefits, students must be making progress toward degree requirements and their courses that comprise “full-time enrollment” must contribute toward their degree until the credit-hour limit has been reached. Ensuring that student veterans optimize their benefits involves “*a complex dance*” (Student Success), especially given that some student veterans “*could be eligible for two or three or four benefits at the same time, so it's very specific to each student*” (Certifying Official). One Certifying Officer described the challenging nature of the process for providing benefits:

[When] a student registers [for courses], we need to go through and verify that their courses apply to their degree. We've got to look at credit hours. We've got to... let the cashier's office know that the student's money is going to come from the VA. We then go in and certify [all of the student veterans at our institution] for the VA: 'This student's going to school during these periods, taking these number of credit hours...etcetera.' So, it's fundamentally a processing operation... And on top of that, all the enrollment changes that are a part [of this review] rain on top of this process. So it's managing the certification, and change management, of veterans benefits whether it's this institution or whether it's any other of the institutions [they] go to. (Certifying Official).

The IAs described the bureaucratic nature of their jobs, with one Certifying Official claiming that their job is “*pure production, movement of data, and doing things the VA wants you to do so these people get paid properly.*” Staff recognize that “*dealing with the VA can be painful and take a long time*” (Disability Services). Student veterans often mistakenly assume that Certifying Officials have more influence than they actually have. As one Certifying Official stated “*some [student veterans] think I am actually an employee of the VA, but I'm not*” (Certifying Official).

Student veterans are also very aware of the complex nature of benefits and rely on university staff to provide accurate and timely advice. They depend heavily on these resources, especially given that such benefits reduce the amount of student debt: “*You're almost stupid not to use [GI Bill benefits] because [they provide] so much for you....you're sitting pretty afterwards*” (SVA

Member/Officer). However, student veterans often experience challenges due to confusion about the rules governing GI Bill benefits. Thus, student veterans:

...need to make sure that they really plan carefully so that they can get all their classes in. If they drop their classes below...12 [credit hours]...they have to pay that money back...So they really have to be careful of how to plan their schedules so they can make progress and not lose their benefits... (Research Staff).

As one IA suggested, student veterans need specialized and early advising, so they do not enroll for courses that ultimately do not count toward their degrees (Disability Services).

The certification process requires that university staff, especially Certifying Officials, work closely with student veterans and learn the finer details of their academic goals and their academic record. As expressed by a Certifying Official:

What we're looking for is whether or not the student has ever attended another school and dropped other classes. Maybe it's something that they didn't even transfer to [our institution]...That's what [the VA is] looking for: Why [is] the students doing this now? Have we had a change of major over and over? Every time a student changes their major I have to report that to the VA and attach a curriculum and what they're going to be, doing....They look for students who are constantly changing majors, can't get into a major, they've been blocked because they can't meet the GPA requirements...They're stuck.

This work also requires a lot of collaboration and coordination with internal and external entities. As an “agent of [the U.S. Department of] Veterans Affairs,” the Certifying Officer certifies their claim for benefits, “but the actual benefits are delivered through financial aid and other means at the university” (Student Success). This work necessarily involves coordination with the VA itself and often necessitates communication with state-level agencies “to make sure that information is disseminated appropriately to campus and [that they are] collectively working on issues around military veterans” (Inclusion/Diversity). One IA, working in Inclusion and Diversity, was particularly proud of how well the university handles this complex process: “I think we definitely coordinate benefits well, especially and work with the cashier's office and financial aid. 'Cause oftentimes benefits are very late, but how we coordinate it hopefully feels...seamless to the veterans.”

These IAs who help with ensuring student veterans understand and receive their educational benefits are providing an important service for the students at the university. Some IAs begin this assistance even before the veterans come onto campus.

Evaluating military and other credits for transfer equivalency

Although there is some overlap between providing advice about benefits and evaluating transfer credits, evaluating transfer credits is worthy of a separate discussion given the challenges described by the interviewees. From an admissions perspective, student veterans are often, although not always, treated as transfer students. University staff emphasize to students that the

transfer pathway will likely be easier for them in terms of being admitted to the institution. For example, a Certifying Official said that “...we tell them if at all possible, you want to come in as a transfer student because [of] the [intense] competition at the freshman level - it’s just a statement of fact – [it] is a lot tougher.” Students are also encouraged to take their prerequisites at a community college to optimize their GI Bill benefits and to have a better chance of being admitted to the four-year institution:

I really felt that if they could take their two semesters of composition, speech, a lab science, a humanities course, and get their math ready to take college algebra, we’ll not look at their high school record. So they can get done in two semesters [elsewhere] and be able to come to us. Some people were in such poor shape, they were going to have to take four semesters or five semesters to be able to get the credits they needed to be able to come work on [a] degree [at our institution] (Transfer Admissions).

Overall, then, student veterans’ status as transfer students is viewed as a way to smooth the transition into the university, with their military experience providing them with certain advantages:

If they were coming [in] as a beginner [right out of high school], especially with something besides engineering, and they had a fair high school record...we would [not] have admitted them as a beginner. But the fact that they have four years of experience, we can be more lenient and go ahead and admit them (Transfer Admissions).

However, this individual goes on to say that they could not be as lenient for programs that “have those absolute course requirements,” such as engineering.

As a result, much effort is directed toward ensuring student veterans are aware of transfer policies and receive course credit, if possible, for work completed elsewhere. Some university staff spend a great deal of time negotiating and advocating for student veterans to receive transfer credit. However, several interviewees indicated that the transfer evaluation process has many shortcomings. The IAs expressed that the process is “tricky” “frustrating” and “something that could be improved across the board.” This was particularly the case for engineering.

In reflecting on challenges that student veterans face, a Transfer Admissions staff member indicated that “their status as transfer student creates more issues than their status as veterans.” Many students initiate their college studies expecting to receive academic credit for their actual military experience or for courses taken while in the military, as expressed by an Admissions Officer: “You’re always expecting that the military person you’re talking with is going to expect more credit than what we’re going to giving them.” Students veterans become frustrated when they learn that a high proportion of their transfer coursework does not meet any degree requirements, but rather are “undistributed credits” (Inclusion/Diversity). Similar sentiments were expressed by a staff member in Transfer Admissions: “The big thing that’s different is they expect more credit for being a veteran. And I don’t necessarily disagree with them, but that’s the way it is. I don’t make the rules.”

An advocate for student veterans who works in Advising described a typical response from a veteran who may be frustrated with the process of obtaining academic credit for military experience:

You mean I've done all this, and I've got an associate's degree...and I can do everything these other younger whippersnappers [18-year-old college students] are doing and it doesn't sub[stitute] for this [class]? Are you kidding me?

He goes on further to suggest a “competency test,” especially “*if there's engineering and stuff that they did [while in the military], and they built a runway, or they built those things, surely there's got to be something.*”

Overall, interviewees felt there has been slow progress on the issue of transferring of military credits. As one IA indicated:

I doubt that we will get out in front of that to have additional credits because this has been an ongoing issue for years. You know, military veterans have been advocating for years, you know, that they receive more [academic] credit and I haven't seen any movement (Inclusion/Diversity).

One IA described trying to work with students who wanted to receive academic credits through the American Council on Education (ACE), which reviews military training and experiences and recommends equivalent college credit. This is “*something all schools struggle with*”:

[It's] like a moving target, with changing classes and revising syllabi and departments reorganizing and so on. It's not an easy thing to identify, but it's an important thing, and it's frustrating for student veterans who say, “I know how to do this. I've done it. I've managed millions of dollars of equipment in this type of setting, and now I have to take this beginning level class” (Research Staff).

Research Question # 2: What are IAs' experiences in working with student veterans in engineering?

Several IAs said they were not familiar with the requirements of engineering degrees and had little interaction with academic departments making it challenging to adequately support SVEs. This lack of interaction is not unusual given the nature of their jobs, some of which may not have involve a direct link to academic programs and departmental curricula. This segmentation contributed to interviewees' frustration at being confined to specific roles when relating to students in general, and student veterans in particular. As described by a Transfer Admissions Staff member:

[In] our admissions office, we do not do anything with financial aid, so we're uneducated in how the veteran benefits apply for their [benefits]...we always just refer them onto the registrar's office who handles that or financial aid who would handle that, which is probably the way it needs to be for a place this big. It's sometimes frustrating that you can't answer their questions while you're talking to them, and that you have to send them to somebody

else. We would probably get the questions so rarely that we would be wrong around 50% of the time, so we're better off just not handling it.

Thus, staff outside engineering may find it difficult to answer students' questions about engineering. Also, those in engineering may not have much interaction or experience with student veterans who are interested in engineering so they may not be familiar with resources for SVEs. An FYE advisor indicated they rarely came across student veterans interested in engineering:

We only have two, maybe three-four veterans that come through, and many of those are not the traditional students. They might be in their late 20s, 30s, who are coming back after serving in the military, realizing, "Oh, I really liked what I did in the service and it's somewhat similar to what, for example, a civil engineer might do. So as a result, I wanted to get an engineering degree."

There was a perception among some IAs that some student veterans may not be prepared to succeed in engineering, particularly given their math background. As a result, some university personnel may try to direct student veterans to other areas of study, as expressed by an Admissions staff member:

If they're interested in liberal arts or some of the technologies, some in health and human sciences, some in ag[riculture]. Some of those are easier for us to move them into than engineering and some of the hard sciences, just because of the rigors. [The student veterans] haven't had the math that they're going to need to be able to sit there. And bringing them in to fail is not really a good idea.

However, university staff also work with student veterans to prepare them to succeed in engineering. A Certifying Official describes how she supports student veterans who are interested in majoring in engineering:

Sometimes students come to [our institution] and say, "It's an engineering school, I want to be an engineer." But if you don't have any math skills, you are going to continuously struggle. If we look across the board, [I say to them]: "What do you have a good level of success in? Or, if you're not doing well in these math classes what can we do to assist you in that? Do you have a learning disability? Do you need to be tested for that?"

A Counselor describes engaging in similar problem-solving with students:

I'm trying to think just about...engineering. There is some shock in the engineering programs especially, and this is true for the entire campus, where the engineering programs just seem to be much tougher. And so, deciding if (A) that's a good fit for [student veterans], I think that's something that we will talk about here. And then, (B) how to make that work, how to just manage the stress that's associated with being in engineering, because I think that's uniquely stressful.

IAs emphasized that they “*advocate for and serve the student veterans*” (Student Success). They also attempt to help student veterans select an appropriate program of study, including engineering:

When we’re looking at veterans, we try to take into consideration that they might not have been the best students in high school, but the life experiences they had while they were in the military probably helped mature them a little bit (Admissions).

Thus, they recognize that student veterans have experiences and characteristics that are important for college success.

IAs’ Recommendations for Improving Services for SVEs

Although university functions are segmented by necessity, there is a need for communication among the many stakeholders supporting veterans. Several individuals recognized the need for a “*one-stop shop*” (Certifying Official) as student veterans “*have more of an issue with being shuffled around.*” A best practice in place described by an IA at one university is the presence of “*a point-person in Admissions who negotiated and navigated various issues for student veterans...a very student friendly practice*” (Inclusion/Diversity). Having such an individual present at the university can do much to mitigate confusion amongst student veterans:

I think from the standpoint of student veterans, if there is that person and you don’t know who to talk to, or even quite understand where you need to get started, you can go there and say, “I don’t know how to explain my problem but it’s something like this. Can you help me find the right path?” Because it can be frustrating to be bumped around offices (Student Affairs Graduate Student).

Interviewees expressed the need to go beyond the provision of services and programs and increase university staff members’ level of knowledge and sensitivity to student veteran needs:

I think there are some schools that have very good resource centers and have full-time faculty, but [they have not set] up a system to help produce people in the field who are empathetic and sympathetic and can understand how to work with that population and can help advance the field (Student Affairs Graduate Student).

This includes continuing to educate the university community, including engineering faculty and staff, to make sure veterans are connected to the resources they need on campus. All four of our study institutions offer Green Zone or Military Ally training designed to “provide insight and awareness of the unique cultural and social background of the military community” [37, paragraph 1]. A staff member working in Disability Services said this training helped him to learn military terminology, for example. Departments of engineering can encourage their faculty to attend such training to “*to help folks understand a particular population and how that population operates and how best to serve them*” (Student Success). For one IA, participating in Green Zone training can help faculty to better communicate with student veterans who may be disappointed when they do not receive credit for work completed elsewhere:

The issue is...[with] courses taken in the military... The Green Zone training actually covers...how to deal with feelings when a student didn't get the transfer of credit and how sometimes that plays out to still maximize the student veteran success and how to have that conversation. So it kind of helps both the military veteran and the professor [to] understand a little bit who they are. And how students might be feeling in their course, as a result (Inclusion/Diversity).

One of our study institutions offered a special session of Green Zone training for engineering faculty and staff. An academic advisor suggested that the college of engineering create a special program for student veterans interested in pursuing engineering degrees at this institution. This would help with academic advising and recognition of veteran status as well as build community support among veterans in engineering:

I'd really like to see some type of program set up in the College of Engineering that directly assists, in whatever format that might be, veterans especially—the veterans are out there on their own. I'd like to see something that is established where we have a day when we work solely with the veterans who come in to first-year engineering. [Typically] we're not even told that they're veterans... So to be informed that we have a veteran that's coming in would be good so that we could do something to recognize their status in a positive way. I think if [engineering] had a program where veterans could meet other veterans and be able to intermingle with each other would be a positive thing. Maybe even have mentoring set up (FYE Advisor).

Interviewees encouraged academic departments, including those in engineering to become involved in discussions related to obtaining academic credit for military experience and work completed elsewhere. As one Student Success staff member said:

I think that is appropriate for the university to...and really it's the academic departments, to give more credibility and respect in terms of credit to military experience. Because students come in with a military transcript... may have done some academic work while in the military, and it ought to be considered, and right now it's not.

IAs expressed a need for better data regarding student veterans:

Once we know how many veterans we have, we can talk to colleges and departments and say, "Guess what, electrical engineering actually has the most student veterans on campus, so let's engage in a conversation about how best to serve student veterans." And then, we know who to target first and then how strategically to take that training throughout campus...even if we go to faculty they're going to be like, "Well, how many veterans do we have?" ...And we're a research institution so they value numbers, they value metrics, so it's helpful to have it in order to engage them in a conversation (Inclusion/Diversity).

Discussion and Conclusion

The increased presence of student veterans at college campuses has resulted in adjustments in universities to serve their needs. Our paper has provided an overview of the roles and experiences of university staff who work with student veterans and others who are devoted to their success, even if not as a formal part of their job duties. Such support is an essential dimension of the broader institutional context for student veterans. As College Choice [11] indicates, “at the end of the day the only thing that matters is that the school’s student veterans believe that they are part of a broader, campus team, and that the school does in fact have their six.” Our study confirms earlier research on SVEs that found a holistic approach, education on veteran issues, and interaction beyond engineering departments best serves student veterans [38].

The results have several implications for engineering education. The experiences and recommendations of the IA’s suggest that there is a need for greater coordination and communication between various entities regarding student veteran policies and needs. Engineering faculty should become involved in broader conversations about offering academic credit for military experience [39] [40]. Raising awareness among engineering faculty and academic staff (such as advisors) of the complex process of getting benefits from the VA might help them advocate for practices such as early registration or other strategies to ensure SVEs get the courses they need.

Many universities have adopted the best practices of having a point person in Admissions for veterans and websites devoted to veterans. We recommend both of these practices for all universities. In addition, engineering programs may want to consider developing websites specifically for veterans interested in engineering. These websites could include information about the value of military experience for engineering education and could point students to all of the relevant campus resources that are focused on their success (e.g., Student Veterans Success Center, FYE advising, engineering disciplines, course requirements).

Departments should consider collecting data to understand the prevalence of veterans in engineering and specifically in the different disciplines to tailor mentoring and support. At the time of the interviews, all four of study institutions had just begun to collect data on student applications about student veteran status to be shared with the departments. Department and college leaders should also encourage faculty to participate in Green Zone training. We recommend that engineering programs request a tailored training for their own faculty and staff, as was done at one of our study institutions.

Regarding IAs outside of engineering, staff could continue to recognize the strengths of student veterans and consider how to promote engineering, engineering technology, and other STEM disciplines, especially when student veterans have relevant experience from the military. Such an asset-based framework would do much to promote the success of student veterans. IAs may also want to more fully consider the best ways for communicating with student veterans prior to matriculation to clarify steps for ensuring a smoother transition into the university. Future efforts should also more fully consider how to ensure greater communication and coordination between student services offices and individuals working with veterans across campus.

Future research should also more closely investigate the relationship between the quality of services offered to student veterans and the student veterans' educational outcomes, as "little is known about the extent to which these resources meet the needs of these students on campus... This information can be useful to leverage improvements to campus support systems for military-connected students" [41]. Institutional interventions for student veterans can also be used to understand other student populations and the differences and similarities in the challenges they face and the assets that they bring to campus in general and their academic studies in particular.

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