A Narrative Inquiry into Veterans in Engineering

Miracle David Solley
wvu, mdsolley@comcast.net

Follow this and additional works at: https://researchrepository.wvu.edu/etd

Part of the Curriculum and Instruction Commons, and the Engineering Education Commons

Recommended Citation
Solley, Miracle David, "A Narrative Inquiry into Veterans in Engineering" (2022). Graduate Theses, Dissertations, and Problem Reports. 11393.
https://researchrepository.wvu.edu/etd/11393

This Dissertation is protected by copyright and/or related rights. It has been brought to you by the The Research Repository @ WVU with permission from the rights-holder(s). You are free to use this Dissertation in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you must obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself. This Dissertation has been accepted for inclusion in WVU Graduate Theses, Dissertations, and Problem Reports collection by an authorized administrator of The Research Repository @ WVU. For more information, please contact researchrepository@mail.wvu.edu.
A Narrative Inquiry into Veterans in Engineering

Miracle D. Solley

Dissertation submitted
to the College of Education and Human Resources
at West Virginia University

In partial fulfillment of the requirements for the degree of
Doctor of Education in
Curriculum and Instruction

Johnna Bolyard, Ph. D., Chair
Patrick Browning, Ph. D.
Reagan Curtis, Ph. D.
Nathan Sorber, Ph. D

Department of Curriculum and Instruction/ Literacy Studies

Morgantown, West Virginia
2022

Keywords: student veterans, engineering education, graphic elicitation, narrative inquiry, time line, ecological systems

Copyright 2022 Miracle D. Solley
Abstract

A Narrative Inquiry into Veterans in Engineering

Miracle D. Solley

Much research has been conducted on student veterans, in general; however, research on student veterans in engineering majors is very sparse. There is national recognition of the importance of student veterans in science, technology, engineering, and mathematics (STEM) fields as evidenced in the passage in 2020 of a bill investigating the lack of veteran students in these fields. This study adds to the literature by answering the following two research questions: What are the experiences of veteran engineering students? How has military service impacted those experiences? Twelve students and five professors from a Doctoral University: Very High Research Activity in the northeastern United States participated in the research. Graphic elicitation in the form of a timeline and semi-structured reflexive interviews were conducted with the students. A semi-structured reflexive interview was conducted with the professors. The timelines were used to conduct a narrative inquiry into the student veteran’s experiences in the military. Two types of students emerged in this study, one group of students appeared to be more aware of the competencies that they had gained through their military service and how to apply them to their studies, while others seemed less aware about how to use these competencies. This difference was determined by exploring whether students expressed themselves more as a student or a veteran using discourse analysis. Three different ecological systems were developed that applied to student veterans in this study. Recommendations were made on how to use this information in the following areas: student orientations, academic advising, mentorship programs, staff and faculty training, and tutoring. A separate orientation for student veterans was recommended highlighting some of the assets they have that are typical in student veterans. In the area of academic advising a series of questions are recommend for advisors to address with student veterans. Mentorship programs are recommended with both student veteran and faculty members. Staff and faculty training is recommended to cover both the barriers and the facilitators that may be present for student veterans. Many of the student veterans in this study expressed an interest in teaching others, and an effort to recruit student veterans as tutors is recommended.
# Contents

A Narrative Inquiry into Veterans in Engineering .................................................. 1

West Virginia University ......................................................................................... 2

Chapter Two Literature Review ............................................................................ 4

   Definition of Veteran ......................................................................................... 4

   Approaches Used in Current Research on Student Veterans ......................... 5

   Nontraditional Student Barriers and Facilitators ............................................. 14

   Student Veteran Barriers and Facilitators ....................................................... 17

   Model Programs ................................................................................................. 37

   Conclusion ........................................................................................................... 38

Chapter Three Method ............................................................................................ 39

   Theoretical Perspective ....................................................................................... 39

   Researcher Positionality ..................................................................................... 45

   Methodology ........................................................................................................ 46

   Participants .......................................................................................................... 47

   Sampling Procedures .......................................................................................... 51

   Methods ............................................................................................................... 52

   Data Sources and Collection .............................................................................. 53

   Data Analysis ....................................................................................................... 59

   Conclusion ........................................................................................................... 66

Chapter Four Results .............................................................................................. 67

   Comparison to Literature ................................................................................... 68

   Awareness of Competencies Developed in the Military ..................................... 88

   Ecological Systems .............................................................................................. 91

   Veteran Stories .................................................................................................... 95

   Conclusion ........................................................................................................... 119

Chapter Five Discussion ......................................................................................... 122

   Barriers and Facilitators .................................................................................... 122

   Recommendations .............................................................................................. 129

   Concerns and Limitations .................................................................................. 135

   Summary .............................................................................................................. 137

   Conclusion ........................................................................................................... 138
References.............................................................................................................................................. 140
Appendix A.................................................................................................................................................. 151
Appendix B.................................................................................................................................................. 164
Appendix C.................................................................................................................................................. 165
Appendix D.................................................................................................................................................. 167
List of Tables

Table 1: *Comparison between Nested and Networked Ecological Systems* 42
Table 2: *Student Veterans’ Demographic Data* 48
Table 3: *Professors’ Demographic Data* 51
Table 4: *Coding Institutional Barriers* 61
Table 5: *Coding Academic Facilitators* 62
Table 6: *Coding for Awareness of Skills Developed in the Military* 63
Table 7: *Four Ways to View Identity* 64
List of Figures

Figure 1: Themes of Transition for Student Veterans 7
Figure 2: Developmental Stages of Self-Authorship 10
Figure 3: Tinto’s Model of Institutional Departure 12
Figure 4: Networked Model of Ecological Systems 43
Figure 5: Nested Model of Ecological Systems 44
Figure 6: The College Microsystem 65
Figure 7: National Guard Ecological System 93
Figure 8: Job Ecological System 94
Figure 9: College Ecological System 95
Dedication

This is dedicated to my father Dr. Paul Solley who spent over 60 years in education.

Acknowledgement

I would like to thank my advisor, Dr. Johnna Bolyard for her support and guidance throughout this process. I could never have done this without her. Thanks to my committee members Dr. Reagan Curtis, Dr. Nate Sorber, and Dr. Pat Browning, for their invaluable encouragement and feedback throughout this journey.

Thanks to my mother-in-law, Colleen Mallory, for spending countless hours reviewing and correcting my work.

Finally, thanks to my wife Shawn Solley for her love and support the entire time.
A Narrative Inquiry into Veterans in Engineering

A new version of the GI Bill, implemented in 2008, has resulted in a resurgence in the number of veterans returning to college. According to Cate et al. (2017), 347,564 student veterans have completed a post-secondary certificate or degree using these Post-9/11 GI Bill benefits. While much has been researched and written regarding veterans returning to college, including the challenges they face and their successes, little research has been conducted in respect to student veterans in engineering majors specifically. The need for more veterans in technical and scientific fields has resulted in the passage of a new bill entitled Supporting Veterans in Science, Technology, Engineering, and Mathematics (STEM) Careers Act (S. Res. 153, 2020), in January of 2020. The bill requires research and reporting on barriers that student veterans face in obtaining a STEM degree. This study will investigate the experiences of student veterans in engineering majors in the Statler College of Engineering and Mineral Resources (Statler College) at West Virginia University (WVU). An exploration of their experiences has implications regarding how to provide veteran engineering students the support they need to be successful in attaining their engineering degrees; it also provides data in the face of nationally recognized paucity of information on student veterans in engineering majors.

This study is important for several reasons. Nationally five year graduation rates of all engineering students average only 49.7 percent (Gross, 2016). Additionally, enrollment in the Statler College is experiencing a decline. Identifying ways to help veterans be more successful could help ameliorate the problem of low graduation rates among all engineering students. Many studies have been conducted on veterans and the challenges they face as well as the assets they possess, but this study is one of the first to study the challenges faced and assets possessed by student veterans who are majoring in engineering. This study examined two questions:

**Question 1:** What challenges do student veterans in engineering majors at WVU encounter in pursuing their degrees?

**Question 2:** What assets do student veterans in engineering majors at WVU possess that can contribute to their success?
1. What are the experiences of veteran engineering students?

2. How has military service impacted those experiences?

Results of the study provide guidance for recommendation about how to best leverage the assets of, and to provide support that mitigates the challenges faced by, student veteran engineering students in order to help them be successful.

**West Virginia University**

There are several reasons for situating this study in the Statler College at WVU. WVU is the flagship university in West Virginia, a Land-Grant University with the following mission, “As a land-grant institution, the faculty, staff and students at West Virginia University commit to creating a diverse and inclusive culture that advances education, healthcare and prosperity for all by providing access and opportunity; by advancing high-impact research; and by leading transformation in West Virginia and the world through local, state and global engagement” (West Virginia University Mission, 2022). WVU is classified in the Carnegie Classification of Institutions of Higher Learning as a Doctoral University: Very High Research Activity (Stump, 2022) providing students at this institution access to some of the most important research in the United States.

There are five universities within the state of West Virginia that offer a Bachelor of Science Degree in Engineering (College Foundation of West Virginia, 2022). The Statler College is the largest of the five and consists of seven departments: Chemical and Biomedical Engineering, Wadsworth Department of Civil and Environmental Engineering, Lane Department of Computer Science and Electrical Engineering, Industrial and Management Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, Petroleum and
Natural Gas Engineering (West Virginia University 2021-2022 Academic Catalog, 2022). Enrollment in the Statler College for the fall 2021 semester was 2,980 students (R. Sigler, personal communication, February 1, 2022). I served as an academic advisor in the Statler College for over 12 years; therefore, I am very familiar with the college. This familiarity facilitated access to student veterans, faculty, and staff that would not have been possible at other institutions.

WVU provides services to its student veterans in a similar fashion to many other universities. For example, WVU allows early registration for its student veterans to enable them to obtain the classes they need in order to graduate in the shortest time possible. In addition, WVU gives credit for military training; however, this is limited to first aid, physical education and Military Science 101 and 102. Some students have received additional credit at WVU but the former are the standard credits awarded to veterans. These awarded credits are rarely used towards degree completion because only one of the Military Science courses can be used toward the general education requirements at WVU. Additionally, WVU opened a Veterans and Military Family Support Headquarters in 2019 which provides such services as tutoring and study space. Unfortunately, this service is located on a separate campus approximately three miles from the College of Engineering and Mineral Resources, and rarely has tutoring available for engineering subjects. These positive steps have seen an increase in graduation rates for student veterans from 39 percent in 2018 to 53 percent in 2021 (S. Riffon, personal communication, March 21, 2018; P. Lipscomb, personal communication, February 1, 2022). However, this is still well below the current six year graduation rate for WVU of 63 percent reported by WVU Institutional Research (2022).
Chapter Two Literature Review

The literature review is organized into the following sections: definition of a veteran, theories used in previous research, and barriers and facilitators faced by both nontraditional students and student veterans as identified in the literature. Following this, I discuss examples of model programs as identified in the literature that exist at other universities.

Definition of Veteran

One of the challenges in examining the research literature on veterans is defining what qualifies a person to be called a veteran, as there is a range of definitions from very narrow to all encompassing. An example of a very narrow definition is the one used by Dalcher (2014) requiring that National Guard or Reserve members must have been deployed to a combat zone to be considered a veteran. His definition was, “A person who has honorably served a stint of active military duty generally considered to be one year in length or more or a National Guard or Reservist who has deployed into a combat zone and returned or who has retired from military service with an honorable discharge” (Dalcher, 2014 p.10). The definition Persky (2019) used is even more restrictive. His definition was “A person who has served in the armed forces, particularly in the Iraq or Afghanistan theaters and is eligible to receive GI Bill benefits” (Persky, 2019, p. 7). A somewhat broader definition was used by O’Rourke (2013) who used the definition from United States Code. However, this definition requires active duty service. His definition was “A person who served in the active military, naval, or air service, and who was discharged or released there from under conditions other than dishonorable” (O’Rourke, 2013, p. 11).

Engineering students encompass a wide range of military service experiences, from National Guard and Reserve service, primarily on weekends, to full time active duty service in
combat zones. While the experiences will be vastly different in a combat zone compared to experiences working flood duty with the National Guard, both experiences will have commonalities such as requirement to work as part of a team or obeying orders. Additionally, the active duty soldier and the National Guard or Reserve soldier will have undergone the same transition into the military through basic training. All of these experiences develop competencies in people that may not be typical of the average college student. WVU does not have a standard definition of a veteran (P. Lipscomb, personal communication, June 3, 2020). Therefore, the definition that is closest to the one I will use in my research is the one used by Livingston (2009) “For the purposes of this study, a student veteran is an enrolled college student who served or serves in the United States Armed Forces” (p. 10). Students involved in ROTC programs are not considered ‘student veterans’ unless they have previously served in the armed forces (Livingston, 2009). For the purposes of my research, I will modify the definition by changing the phrase “enrolled college student” to “enrolled college student or recent college graduate.” Therefore, the definition I will use in this study is as follows: For the purposes of this study, a student veteran is an enrolled college student or recent graduate who served or serves in the United States Armed Forces. Using this definition of veteran will enable me to capture the widest experiences of student veterans and develop insights that will benefit the most veteran engineering students.

**Approaches Used in Current Research on Student Veterans**

Most research on student veterans examines transition and retention. Transition refers to changes that individuals undergo as encounter new roles in life. Retention research examines why students remain in college or drop out of college. Existing research discusses experiences of student veterans, in general, not specifically those in engineering. Existing research on student
veterans provided background on the barriers and facilitators that student veterans may encounter in college.

**Transition**

Most research on transition has drawn on theories developed by Schlossberg (Schlossberg et al., 1989) and Magolda (2014). Schlossberg’s theory examines transitions as they relate to a change in a person’s role in life, while Magolda’s theory explores transition in the context of how people make decisions. These are discussed below.

**Role Transition.** The transition model developed by Schlossberg (1989) consists of three stages: moving in, moving through and moving out. In the moving in stage, a person has to become familiar with the new system’s expectations, rules and regulations. The moving through stage can be an extended time and can have such challenges as staying committed and remaining motivated. Finally, moving out happens when a person ends one transition and begins another transition. According to this model, four coping resources exist to assist a person in the transition process: situation, support, self and strategies. The situation includes factors such as: duration, previous experience, other stressors and timing. Support can include family, friends and the institution. Self relates to personal characteristics and psychological resources. Finally, strategies are coping resources that can include information seeking, direct action and inhibition of action (Anderson et al., 2012). According to Anderson et al. (2012), a transition is “any event or non-event that results in changed relationships, routines, assumptions and roles” (p. 39). When student veterans leave the military environment for the college environment, they undergo many changes including, at a minimum, significant changes in their routines and roles.

The most extensive use of Schlossberg’s theory as it applies to student veterans was conducted by DiRamio et al. (2008), who developed an adapted form of the Schlossberg model
based on their research of 25 student veterans who had been on active duty in either Iraq or Afghanistan. Their adapted model includes factors that are unique to joining the military and transitioning through the military to college. Moving in factors include why a person joined the military and deployment overseas. The moving through stage includes memorable experiences and earning credits while deployed. The moving out phase includes military transition programs and academic preparation. The final stage they considered was another moving in stage which dealt with the transition into college, including such factors as connecting with peers, the campus Veterans Affairs Office, having Post Traumatic Stress Disorder (PTSD) and/or Traumatic Brain Injury (TBI). This revised model is depicted in figure 1 (DiRamio et al., 2008, p. 20).

**Figure 1**

*Themes of Transition for Student Veterans*

<table>
<thead>
<tr>
<th>Moving In</th>
<th>Moving Through</th>
<th>Moving Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Why join?</td>
<td>- Combat duty</td>
<td>- Transition program</td>
</tr>
<tr>
<td>- Basic training</td>
<td>- Memorable experiences</td>
<td>- Returning home</td>
</tr>
<tr>
<td>- Getting “called up”</td>
<td>- Earning credits</td>
<td>- Academic preparation</td>
</tr>
<tr>
<td>- Serving overseas</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

College

<table>
<thead>
<tr>
<th>Moving In</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Connecting with peers</td>
</tr>
<tr>
<td>- Blending in</td>
</tr>
<tr>
<td>- Faculty</td>
</tr>
<tr>
<td>- Campus veterans office</td>
</tr>
<tr>
<td>- Finances</td>
</tr>
<tr>
<td>- Students with disabilities</td>
</tr>
<tr>
<td>- Mental health and PTSD</td>
</tr>
</tbody>
</table>

*Note.* This figure describes the transitions that student veterans encounter from when they enter the military through leaving the military and entering college. Adapted from DiRamio, D., Ackerman, R., & Mitchell, R. L. (2008). From combat to campus: Voices of student-veterans. *NASPA Journal, 45*(1), p. 20.
Each stage within the model developed DiRamio et al. (2008) may contribute to the success or failure of student veterans in engineering. For example, being able to apply credits earned in the moving through stage toward their engineering degree may assist student veterans successfully completing their degree. On the other hand, students who are not able to use these credits may become discouraged and drop out of college.

Main et al. (2016) also used Schlossberg’s transition theory in their research as a framework for studying why student veterans choose engineering majors, identifying two coping resources that may be important factors for why veterans are successful engineering students. Veteran engineering students’ military experiences correspond to the situation coping strategy. Their experience with engineering-related tasks, such as fabrication of equipment or as a maintenance technician who tests and repairs aircraft systems, provides a good background for their engineering curriculum. Personal characteristics and age align with the self-coping strategy. Within the self-coping strategy, the self-discipline, strong work ethic and resilience they developed through their military service enabled them to be successful students.

Rumann and Hamrick (2010) also used Schlossberg’s transition theory in their study of veterans re-enrolling in college after deployment to war zones. Their research highlighted the importance of support, another coping strategy identified by Schlossberg, in making a positive transition. Support, from friends, family, faculty and staff, was a key factor in the student veterans when they interviewed for making a successful transition. This support often took the form of encouragement and motivation to achieve their academic goals from family and friends. Support from veteran peers, who understood what challenges they faced in transitioning from the military to academia, was particularly effective. The role of support in student veterans’ success in engineering is an area that was explored in my research.
Decision Making Transition. Magolda’s (2008) research focused on the change in the decision making process of individuals, from relying on external sources to making decisions based on an internal means (self-authorship). Self-authorship, which Magolda defined as “the internal capacity to determine their beliefs, identities and social relations” (Magolda, 2014, p. 26), is one of the main challenges of a college education. Based on a 31 year longitudinal study of development in young adults from age 18-39, Magolda (2008) identified three elements of developing self-authorship: trusting the internal voice, building an internal foundation and securing internal commitments. Trusting the internal voice involves recognizing that what happens is often controlled by external sources while how one deals with situations is an internal choice. The next step is building an internal foundation, which happens when people consciously create a philosophy or framework to guide their decisions. Finally, securing internal commitments occurs when people go from understanding their internal beliefs to accepting them as the guiding force in how they make decisions. Magolda’s theory is depicted graphically in figure 2 (Fiss et al., 2019, p. 2).
**Figure 2**

*Developmental Stages of Self-Authorship*

<table>
<thead>
<tr>
<th>Dimensions of Self-Authorship</th>
<th>Phases of Self-Authorship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Development: How do I know?</td>
<td>Following Formulas</td>
</tr>
<tr>
<td>Believe what “authority” believes</td>
<td></td>
</tr>
<tr>
<td>Interpersonal Development: Who am I?</td>
<td>Define self through external others</td>
</tr>
<tr>
<td>Interpersonal Development: How do I construct Relationships?</td>
<td>Approval seeking in relationships</td>
</tr>
</tbody>
</table>

*Note.* This figure shows the stages a person transitions through as they develop Self-Authorship


Many student veterans leave the military having relied on external sources to make decisions (DiRamio & Jarvis, 2011). Depending on their job and rank in the military, they may not have had to make many decisions in their daily routines. As a result, college classrooms, where debate is encouraged, may be a challenge for student veterans. They may feel that there is one correct answer and that answer comes from an external source, such as a college professor, not an internal source. For student veterans in engineering, the transition to making decisions on their own in class may be very challenging. In many courses in their program, there is only one correct answer; in others, such as design classes, there are many solutions to a problem and
engineering students must determine the best answer. DiRamio and Jarvis (2011) recommend courses specifically designed to help student veterans move from external sources of authority toward self-authorship. Such courses would include modules on an orientation to college, critical thinking and self-authorship. Magolda comments that student veterans will have an additional challenge of reconstructing their identities and belief systems that traditional college students will not have. She also highlighted that student veterans will have experienced challenging situations, which she labels complexities, that other students have never faced and, “Helping them process these complexities (rather than avoiding them) and bring forward their personal authority, which was likely in the background in military service, are necessary to aid their transition to college and civilian life” (as quoted in, DiRamio & Jarvis, 2011, p. 93). How well veteran engineering students are able to make this transition to self-authorship may have a significant impact on how successful they are in attaining their academic goals.

Retention

Research on retention often draws on Tinto’s (1993) theory about why students remain in college or drop out of college. Many researchers have drawn on this theory to examine these decisions as they relate to student veterans.

Tinto (1993) describes his model as a longitudinal and interactional model. The model is longitudinal because it looks at a student’s college experience over time. The interactional nature of the model looks at student interactions within the institution that result in their either staying and completing their degrees or departing the institution without a degree. The model considered students’ pre-entry facilitators, goals and commitments, institutional experiences, integration into the institution and how these factors determine whether a student remains in college or departs. Tinto’s model is depicted graphically in figure 3 (Aljohani, 2016, p.6).
Figure 3

*Tinto’s Model of Institutional Departure*

Note. This figure describes the components of Tinto’s Model of Institutional Departure. Adapted from Aljohani, O. (2016). A comprehensive review of the major studies and theoretical models of student retention in higher education. *Higher Education Studies*. 6(2), p. 6. [http://dx.doi.org/10.5539/hes.v6n2p1](http://dx.doi.org/10.5539/hes.v6n2p1)

(Degree completion rates are a metric that all universities use to measure the success of their programs. Completion rates for student veterans receive additional scrutiny because many receive GI Bill benefits paid for by tax dollars. Unfortunately, the retention rate for student veterans nationally is only 54 percent (S. Riffon, personal communication, March 26, 2018).

DiRamio and Jarvis (2011) found that pre-entry skills, such as global awareness and experience with different cultures, are skills that military veterans have developed that should, according to Tinto’s model, make them more likely to persist in college. While many other
researchers have emphasized the importance of student veterans connecting with other veterans, DiRamio and Jarvis point out that this is only a first step. They cite Tinto’s research which determined that if students connect only with other students with whom they are comfortable, they are less likely to adapt and persist in college. O’Rourke (2013) and Smith (2012) also draw on Tinto’s model arguing that assimilation into the college culture is important if student veterans are to persist to graduation. Elliott, Gonzalez, and Larsen (2011) reference Tinto’s (2003) work on learning communities to recommend that veteran freshman take blocks of courses limited to veteran students only, allowing professors to tailor courses to meet their specific needs. The learning community would help ease the transition to college in the student veterans’ first year; however, as other researchers have emphasized, it would be important that in subsequent years veterans interact with other non-veteran students. Finally, Smith (2012) points out that, according to Tinto, commitment to the institution relies on veterans’ successful integration into the institution. Factors that make veteran engineering students successful may provide insights that will not only improve veteran engineering students’ retention rates but may also be applicable to other student veterans.

**Summary**

Much of the existing research on student veterans has focused on transition and retention. This research has drawn heavily on theories of Schlossberg (1989), Magolda (2008) and Tinto (1993). Schlossberg’s model was used by DiRamio et al. (2008) to develop an adapted form of the model which includes factors that are unique to joining the military and transitioning through the military to college. Main et al. (2016) also used Schlossberg’s transition theory to identify two coping resources that may be important factors for why veterans are successful engineering students. Finally, Rumann and Hamrick (2010) used Schlossberg’s transition theory to highlight the importance of support, a coping strategy identified by Schlossberg, in making a positive
transition. DiRamio & Jarvis (2011) applied Magolda’s theory of self-authorship recognizing that many student veterans leave the military having relied on external sources to make decisions. They recommended courses specifically designed to help student veterans move from external sources of authority toward self-authorship. Tinto’s model was used by O’Rourke (2013) and Smith (2012) to argue that assimilation into the college culture is important if student veterans are to persist to graduation. Additionally, Elliott, Gonzalez, and Larsen (2011) reference Tinto’s (2003) work on learning communities to recommend that veteran freshman take blocks of courses limited to veterans students only, allowing professors to tailor courses to meet their specific needs. In the next section a brief review of barriers and facilitators for nontraditional students in general is provided. Following this overview the barriers and facilitator for student veteran developed through the use of these theories is provided.

Nontraditional Student Barriers and Facilitators

Although not the focus of this study, a brief overview of the literature on nontraditional students in general provides background for comparison with student veterans who are a subpopulation of nontraditional students. Nontraditional students are defined by Spellman (2007) as students who are 24 years of age or older. These findings are organized around barriers and facilitators. The barriers and facilitators are further divided into personal, social, academic and institutional. For the institutional category, there are only barriers since no facilitators were evident in the literature reviewed.

Personal Barriers and Facilitators

Some of the personal barriers that nontraditional students face are related to having a family. Issues in this area include lack of sufficient daycare, family activity schedules and family
responsibilities (Ritt, 2008). They are also more likely to be working and only have time and money to attend part time. Additionally, they are more likely to be located in an area that lacks easy access to college campuses and unable to move due to their work and family commitments (Rabourn et al., 2018; Spellman, 2007).

The research literature described several personal facilitators experienced by nontraditional students. For example, nontraditional students normally possess a greater sense of maturity than their traditional student counterparts (Wyatt, 2011; Jepson & Tobolowsky, 2020). Additionally, they are very focused and more motivated than their peers (Wyatt, 2011; Wu 2008). Kassworm (2008) reports that these nontraditional students also are resilient and risk takers, with a belief in having a high probability of success. Several of these students also mentioned that their communications skills were greatly improved during their mission. Although not mentioned in other literature reviewed, Jepson and Tobolowsky (2020) studied six male members of The Church of Jesus Christ of Latter-day Saints (LDS) who delayed school for mission work. They reported an increase in leadership skills in these individuals. One of these students stated that he routinely managed up to 16 people during his mission work.

Social Barriers and Facilitators

Rabourn et al. et al. (2018) found that nontraditional students had less collaborative learning experiences and fewer interactions with faculty than traditional students. Additionally, students in Jepson and Tobolowsky’s (2020) study felt that, during their first year, they were at a social disadvantage being older than traditional first year students. Finally, Wyatt (2011) found nontraditional students were sometimes angry with traditional students because of their immaturity and what they felt was disrespect towards their instructors.
**Academic Barriers and Facilitators**

Spellman (2007) found that nontraditional learners often had a lack of academic preparation for higher education. Wyatt (2011) found that this was especially true for math and science coursework. Many on the nontraditional students had only completed the minimum required courses in math and science in high school. Additionally, those that had higher level math and science classes had not used those skills since high school.

One of the academic facilitators that nontraditional students possess is academic engagement (Rabourn et al., 2018). Wyatt (2011) found that nontraditional students spend much more time on academics and subject matter than traditional students. The LDS students studied by Jepson and Tobolowsky (2020) maintained their academic skills due to a requirement of spending two hours a day studying religious material and, in some cases, a foreign language. Additionally, these students reported improved time management and critical thinking skills. Kassworm (2008) found that nontraditional students were dedicated to quality learning and completing their education.

**Institutional Barriers**

Ritt (2008) found that intuitional barriers for nontraditional students in her study included limited access and high cost. In the study conducted by Jepson and Tobolowsky (2020) most of the students were unsatisfied with academic advising, feeling that advisors were unhelpful or treated them like children.
**Student Veteran Barriers and Facilitators**

There is a variety of barriers that student veterans face but that typical college students do not. Barriers for the purpose of this study are anything that hinders completing a college degree. Additionally, there is a variety of facilitators that student veterans possess that typical college students do not. Facilitators for the purpose of this study are anything that assists in completing a college degree. According to Mobley et al. (2018, p. 10) “deficits at the beginning (right out of high school) in terms of confidence, motivation or skills were often transformed in the military into assets by the time they enrolled (or re-enrolled) in college.” The barriers and facilitators are organized into four categories: personal, social, academic, and institutional.

**Personal Barriers**

Personal barriers are the barriers that affect individual student veterans, and much of the literature focuses on these barriers. They are organized according to the following four categories: TBI and PTSD, self direction, loss of purpose and hiding veteran status.

**TBI and PTSD.** Traumatic Brain Injury (TBI) and Post Traumatic Stress Disorder (PTSD) are prevalent in much of the research dealing with student veterans. The American Council on Education (2011) defines TBI as “a blow or jolt to the head or a penetrating head injury that disrupts the functioning of the brain” (p. 2). They define PTSD as “a psychological health injury that can develop in response to exposure to an extreme traumatic event” (p. 3). There is a wide variety of reports on how many returning veterans have these serious injuries; however, the most frequently cited source is from a 2008 Rand study which estimates that 14 percent of returning combat veterans suffer PTSD and 19 percent suffer from TBI (Tanielian et al., 2008, p. 11). With such a high percentage of veterans experiencing these injuries, it is inevitable that some student veterans will be affected.
Student veterans with these injuries may have difficulty learning and require assistance that many schools may not have the resources, experience, and knowledge to provide. As an example, the treatment of these conditions may be beyond the capabilities of student health services on many campuses (Cook & Kim, 2009; DiRamio & Jarvis, 2011). Therefore, in order to provide counseling services to student veterans, schools may have to contract these services from specialized health providers. Absence from class due to pain, medical appointments, or difficulty learning due to the effects of medication are all possible consequences of PTSD or TBI (Church, 2009). These issues may require professors to make special accommodations for the students. In addition to counseling and learning accommodations, social support through on campus student veteran organizations may help student veterans afflicted with these conditions (Elliott et al., 2011).

**Self-Direction.** The military is a highly structured organization. In many units, every minute from the time one wakes up until the time one goes to bed is planned (Dalcher, 2014; Livingston, 2009; Smith, 2012). College is a much different environment where the only time that is planned is a class schedule. According to Cahill (2013) this is a major problem for some student veterans as they are waiting for someone to tell them what to do. As a result of this freedom, some student veterans who were used to their days being organized from the time they got up to when they went to bed feel lost when having to organize their own time (Ackerman et al., 2000).

**Loss of Purpose.** One of the barriers expressed by student veterans as they transition from the military to college is the feeling that the challenge and sense of purpose they had experienced in the military does not exist on campus (Smith, 2012). Starting with basic training, military members are taught that they are part of a team and have to work together to achieve
success. Transitioning to the college environment where there is no team can be difficult. A soldier’s self-esteem is often closely tied to his or her unit and its mission (Church, 2009). The loss of this sense of pride in a unit is another challenge in the transition from veteran to college student (DiRamio & Jarvis, 2011). This loss can be particularly true for soldiers who were deployed. As expressed by one of the student veterans who Dalcher (2014) interviewed, there was a feeling that their life had a higher purpose and they were accomplishing good things while deployed. As Bauman (2009) noted, these military members go from waking up every morning with a clear purpose to being essentially unemployed when they leave the military. This can cause motivational barriers in veterans as they transition to college students. One student veteran felt that, as a student, he had nothing to contribute as opposed to his time in the military when he knew how to fit in. (Smith, 2012).

Hiding Veteran Status. While most student veterans expressed pride in serving in the military, there are those who choose not to reveal their veteran status on campus. The student veterans who are receiving GI Bill benefits are easy to identify through the Veterans Affairs Certifying Official. However, those who are not receiving GI Bill benefits can go unnoticed unless they self-identify as a veteran. There are several reasons why they may choose not to disclose their veteran status. Some may do so to avoid being drawn into discussions of their experiences in combat (Rumann & Hamrick, 2010). Others may feel that their status as a student is more important than their status as a veteran (Main, et al., 2016; Smith, 2012). Still other students want to avoid receiving any special treatment as veteran (Livingston, 2009; Rumann, & Hamrick, 2010). While the choice to identify as a veteran or not is certainly a right of each student veteran, those student veterans who chose not to reveal their veteran status may be missing out on opportunities on campus that could assist them in achieving their academic goals.
**Personal Facilitators**

Personal facilitators that many student veterans possess include an increased maturity level and a mission focus. The increase in maturity occurs not only from student veterans being older, but from their experiences in the military. The focus on completing their degree that many veterans possess is a result of the emphasis in the military on mission accomplishment.

**Maturity.** One of the main facilitators that student veterans display is an increased level of maturity (Dalcher, 2014; DiRamio & Jarvis, 2011; Mangan, 2009). Although veterans are often older than traditional college students, it is not age alone that makes these students more mature than their peers. The situations that veterans encounter while in the military often make them more mature than people their age. As Perksy (2009) notes, the experience of being in the military is not the same as the experience of working at Sears. These student veterans have often had leadership roles, even at an early age (Ackerman et al., 2009).

One student veteran interviewed by Livingston (2009) related that after being surrounded by people who took on a lot of responsibility in the military, he wondered what was wrong with the traditional students he saw acting irresponsibly in class. Another veteran student who spoke with Smith (2012) recounted that even though at 22 she was not older than many of the students she was in class with, she was more focused on school work. While other students were texting, falling asleep, or being disrespectful, she focused on learning. Another student veteran engineering student expressed his displeasure with the way students were disrespectful to their professors (Camacho et al., 2021). Several student veterans expressed the feeling that they looked at life differently after their military service and concentrated on what they wanted to do for the rest of their life (Mangan, 2009; Rumann, & Hamrick, 2010). Ackerman et al. (2009) summarized the effect that military service has on many student veterans: “People in the military
do serious things and that doing serious things becomes good preparation for being a serious college student” (p. 7).

**Mission.** Military personnel are accustomed to completing their mission, which is a result of the emphasis the military places on mission accomplishment (Cook & Kim, 2009; DiRamio et al., 2008). Many student veterans joined the military to get educational benefits (Ackerman et al., 2009; Smith, 2012). When they transition to being college students, many see completion of their degree as their new mission, resulting in their being more motivated than other students (Ely, 2008; Livingston, 2009). A student who spoke with Livingston (2009), related that he valued an education now because he had seen how limited his choices would be without one. Similarly, a student interviewed by Rumann and Hamrick (2010) related that as an enlisted man in the army, stuck in bad situations, he felt that an education offered a way out, and this realization made it easier for him to apply himself. An experience in Iraq proved motivational for another student. There had just been an attack in downtown Baghdad close to a university. He saw students walking past his convoy smiling on the way to class. Their apparent happiness for being able to get an education under such circumstances motivated him to want to go to school (DiRamio et al., 2008).

**Social Barriers**

Social barriers are barriers that result from negative interactions with others on campus. These barriers include anger at a lack of student discipline and discomfort with crowds.

**Anger at Lack of Student Discipline.** Student veterans come from backgrounds where being late or disrespectful to instructors is not tolerated. As one of the student veterans interviewed by Persky (2009) related, if they had been disrespectful to an instructor, or had fallen asleep in a military class room, they would have been be doing pushups in the back of the
classroom. Therefore, the lack of respect some students show to professors is often hard for them to accept. Most student veterans are more focused on completing their degree than students right out of high school (Dalcher, 2014; Livingston, 2009; Mangan, 2009).

Group projects can be another source of conflict between student veterans and traditional students. For example, Livingston (2009) found that veterans in his study expressed that when traditional students don’t show up for group work, or show up drunk, student veterans had little tolerance. In extreme cases, they may take matters into their own hands either by verbal or physical assault (Mangan, 2009). This angry reaction not only makes adjusting to college and making friends hard, it can lead to disciplinary action against the student veteran. While this is only highlighted by Mangan, verbal or physical assault are a significant concern.

**Discomfort with Crowds.** Student veterans returning from combat situations may feel uncomfortable in crowds. Being in a crowded area while in a combat situation can be a very dangerous environment, and some student veterans have problems adjusting to feeling comfortable in any crowd. This is another adjustment to the transition to college that provides a challenge for some veterans that many other students may not experience. One of the students interviewed by Dalcher (2014) arranged his schedule to take morning classes which were less crowded. A student interviewed by Elliott et al. (2011) requested alternate testing because the student was uncomfortable in a crowded classroom. Another student remarked that he felt uncomfortable in the large crowds at football games (Ruman & Hamrick, 2010). Some student veterans have stated that sitting with their backs against the wall in classrooms made them feel safer (Dalcher, 2014; Mangan, 2009; Rumann & Hamrick, 2010).

Similar to the discomfort in crowds, student veterans may experience stress when other environmental factors remind them of dangerous situations. Several students reported feeling
confined in a classroom, and as a result, having to get up and walk around during long classes (Ackerman et al., 2009; Mangan, 2009). As another example, one student related having flashbacks when he heard other students speaking in Arabic in the hallway (Mangan, 2009). All of these situations relate to challenges that student veterans may have with the various situations in which they may find themselves during the regular course of college-life experiences, separating them from most other college students who do not face these challenges.

**Social Facilitators**

Social facilitators that many student veterans possess include experience with diversity and the ability to work well on teams. In the military many student veterans have experienced diversity in their work environment and have often experienced other cultures in overseas deployments. Working as part of a team is prevalent in the military, and most veteran students will have experience leading teams.

**Experience with Diversity.** Many of the experiences student veterans have had make them unique students, different from both traditional and nontraditional students. Many have experience working with a very diverse group of people on a daily basis, often in life-endangering situations (Ryan et al., 2011). The diversity in the military is illustrated in the Department of Defense 2020 Demographic report. According to this report, 31.1 percent of the active duty and 27.5 percent of the National Guard and Reserve force are minorities.

In addition to the diversity within the military, many student veterans have had experience working outside the United States with other cultures. Rumann and Hamrick (2010) interviewed several students who highlighted this. One student veteran expressed how he had enjoyed playing soccer and eating with Iraqi citizens, while another explained living in a different culture forced him to think differently about his upbringing, therefore changing his
view on life. While student veterans bring life experiences that most other students do not have, lack of college credit for this experience can cause a feeling of resentment. A student veteran interviewed by Livingston (2009) explained that he had been to Iraq, Afghanistan and Africa and thus, did not feel he had much to gain from a class on cross-culture. These experiences with diverse people and cultures contribute to student veterans’ potential to add a unique perspective to current events (Mangan, 2009). However, discussions of current events in class, especially the conflicts in Iraq and Afghanistan, are personal for some veteran students and may cause them to react differently from other students (Persky, 2009).

**Teamwork.** Student veterans are often well suited to working in and leading teams as a result of their military training. According to the Association of American Colleges and Universities 2008 report, 76 percent of employers want more emphasis placed on “teamwork skills and the ability to collaborate with others in diverse group settings” (p. 12). Veterans come with these skills already highly developed. They are taught to work as a part of a team beginning with basic training (Church, 2009). This continues throughout their military career where they rely on the team to help them survive (Redden, 2008). As a result of this emphasis on teamwork in the military, student veterans often take leadership roles on team projects in the classroom (Main et al., 2016; Steele, Salcedo & Coley, 2010). The ability to work as a member of a team is especially important for engineering students because engineers seldom work on a project alone. As an example, a hybrid vehicle design would likely include mechanical engineers, electrical engineers and computer engineers. The emphasis placed on learning how to work effectively in teams as an engineering student is demonstrated by the Accreditation Board for Engineering and Technology (ABET) (2018-2019) requirement that engineering programs demonstrate that their
programs have student outcomes preparing them “to function on multidisciplinary teams” (General Criterion 3. Student Outcomes).

**Academic Barriers**

Academic barriers that student veterans face fall into two broad categories: not receiving credit for training and diminished study skills. Although many student veterans have received extensive training through their military careers, much of this training is not recognized as college credit. Diminished study skills are a result of many student veterans having been out of an academic environment for several years.

**Credit for Training.** One of the major complaints by student veterans is the lack of college credit they received for their military training. Student veterans have undergone extensive training in the military, ranging from basic training, where they learned skills like teamwork and mission focus, to much more advanced training in such skills as computer programming or helicopter repair. Yet, often this training is not transferable to college. As one of the student veterans interviewed by Persky (2009) explained, his military training included classes in leadership and problem solving. He took three classes at his college and received a certificate in supervision, but the classes were essentially a repeat of training he had already received in the military. DiRamo and Jarvis (2011) warn that student veterans can easily become discouraged if their military training is not evaluated in good faith. A college administrator who had previously spent 30 years in military education interviewed by Persky (2009) made the point that the Department of Defense is the largest educational institution in the world. Soldan et al. (2013) propose one possible solution to the problem with the use of advanced placement exams or credit by examination developed especially for student veterans. According to Cook and Kim (2009) “Almost three-fourths of all reporting colleges and universities with programs and
services for veterans and military personnel award credit for military training and occupational experience” (p. ix). Despite sounding good for student veterans, this may be very misleading. As the director of the veteran’s center at Arizona State University points out, it may make the veteran feel good to receive credit but it may not fulfill any requirements toward completing their degree (Haynie, 2014).

**Diminished Study Skills.** Many student veterans have been had a significant gap in their schooling either from high school or previous college (DiRamio et al., 2008). Diminished study skills, especially math skills, were an issue for several student veterans. As one student veteran explained, he had to go back and study material covering fundamental concepts and mathematics. (Livingston, 2009). Some students reported a drop in GPA, while others withdrew from several classes (Ackerman et al., 2009; DiRamio & Jarvis, 2011). Many colleges address this issue by offering classes to assist veterans with their study skills (Cahill, 2013).

**Academic Facilitators**

Academic facilitators many student veterans possess include time management skills, engineering skills, and discipline. Because the nature of military operations requires that they be accomplished on time, good time management skills develop in many veterans. Many of the tasks student veterans have performed in their military service translate into engineering skills. Discipline is a cornerstone of the military, and the discipline student veterans develop often translates into good study skills.

**Time Management.** One of the barriers many student struggle with is time management. Student veterans often have developed good time management skills because of their military experiences (Ackerman et al., 2009; Livingston, 2009). When executing a mission in the military, the timing of events is critical. Backward planning from the time the mission kicks off
and accounting for all tasks that must be accomplished prior to that time becomes second nature. This same process can then be applied to homework or when a paper is due in college. In a survey conducted by Zoli et al. (2015), of 8,500 veterans, 64 percent indicated that time management was one of the skills they acquired through military service. One of the students interviewed by Main et al. (2016) commented that his experience in that military gave him the discipline to not procrastinate compared to high school where he always procrastinated.

**Engineering skills.** Tasks that student veterans have performed during their military service are often engineering related. In a survey conducted by Zoli et al. (2015) of 8,500 veterans, 43 percent of those surveyed indicated that their military job was science, technology, engineering or math (STEM) related. A sample of the areas in which service members received technical training included aerospace, aviation, cryptologic, electronic systems, structural engineering, and weapons systems engineering. For some veterans, who were not necessarily in engineering-related fields in the military, their military experiences led them to pursue an engineering degree. Working in austere conditions with limited supplies results in military members often having to improvise solutions. In many ways this is an abbreviated engineering design process where a prototype fix is designed, implemented, and tested in the field. As one student veteran explained, he had spent many hours repairing equipment in the military and wondering why it was manufactured a certain way (Mobley et al., 2017). Frustration with the way things were made led some veterans to pursue an engineering degree.

While there are many military jobs that relate to preparation for completing an engineering degree, according to research conducted by Cate (2014), only 17.8 percent of those veterans earning a degree were in a science or engineering field. As Main et al. (2016) noted, this indicates that more work needs to be done to capitalize on the pool of veterans who have
engineering related skills. One issue that may discourage veterans from completing an engineering degree is that they may not receive college credit for their technical training, resulting in their being placed in freshman and sophomore level classes that do not challenge them (Soldan et al., 2013).

**Self-Discipline.** Experiences in the military often lead to increased self-discipline which allows student veterans to be more focused on studies (Ackerman et al., 2009; Main et al., 2016). Several student veterans stated that they stayed in and studied at night rather than partying like many of their classmates (Dalcher, 2014; Ely, 2008). Many who previously had been in college reported an increased grade point average upon return from deployment. Livingston (2009) found that student veterans were more dedicated to academics after deployment. One student related how he had gotten all A’s except for one B while taking difficult classes like physics and organic chemistry. Another student, an electrical engineering major, had a 2.3 GPA prior to deployment and a 3.3 GPA after he returned (Livingston, 2009). The lack of discipline in traditional college students compared to their veteran peers was noted by several student veterans (Dalcher, 2014; Livingston, 2009). A Veterans Certifying Official interviewed by Livingston (2009) highlighted the fact that student veterans read their emails, are where they are supposed to be when they are supposed to be there and get things done, demonstrating that from both a student and an administrator point of view, many veterans have an increased level of self-discipline compared to traditional college students.

**Institutional Barriers**

Institutional barriers addressed in the literature include insensitive comments, and withdrawal and reenrollment. Unfortunately, student veterans still encounter insensitive
comments on many campuses. Many student veterans still serve in the National Guard and Reserves and face barriers when they are called to active duty.

**Insensitive Comments.** As a result of their veteran status, many student veterans are subject to insensitive questions about their service. Many of the students interviewed in the research literature related being asked insensitive questions by classmates and professors. The most prevalent question being, “Did you kill anyone?” (Dalcher, 2014; Livingston, 2009; Mangan, 2009). Other student veterans were subjected to harassment for killing babies and asked if they had seen anyone blown up (Persky, 2009; Rumann & Hamrick, 2010). For student veterans who are having trouble adjusting to the transition to college and making new friends, these questions can have a very negative effect. Comments that minimized their military service were also reported by several student veterans. One of the students interviewed by Rumann and Hamrick (2010) felt hurt when she was told that she was “only in Kuwait”. Another student was offended when he was told he was just a reservist after serving in the desert just three months prior to returning to school (Livingston, 2009). As a final example, one student was asked by one of his professors why he joined the military, because he seemed pretty smart (Persky, 2009). With these attitudes and comments prevalent on many campuses, it is no wonder why these individuals feel more comfortable around other student veterans.

**Withdrawal and Re-enrollment.** Many student veterans have experienced a gap in their college education. Some student veterans have dropped out of school to join active duty service, while other student veterans who are members of the National Guard or Reserves have been called to active duty, often in the middle of a semester. For the National Guard or Reserve student, this call up often means they will miss two or more semesters (Bauman, 2009). For the student who goes on active duty, it could be years before he returns to college.
Having to pay tuition for a semester that they were not able to complete creates a financial strain for many students. However, as Cook and Kim (2009) found in their survey of 713 institutions, over 80 percent of those surveyed had provisions for tuition refunds for student veterans called to active duty mid-semester. However, other administrative barriers that students faced included closed email accounts, loss of access to technology, loss of student insurance, cancellation of financial aid and being out of sequence for required courses when they returned to school (Rumann & Hamrick, 2010). One positive result of technology is that some students were able to continue their education while deployed through online courses (Mangan, 2009). However, delaying school for military service can have a positive impact. According to Rumann and Hamrick (2010) these challenges are often offset by the increased maturity, confidence and motivation to complete their schooling gained by student veterans through their service.

**Institutional Facilitators**

In this section, the services found in the research literature, that institutions can provide for student veterans that serve as facilitators to assist them in attaining their degrees will be discussed. Institutional policies and services that affect the ability of student veterans to be successful will be discussed, including: tuition policies, a separate orientation for veterans, nontraditional delivery of curriculum, and financial benefits. Under the area of academic facilitators to increase student veteran success, the following will be addressed: staff and faculty training, academic advising, and study skills. Social functions provided by the institution that have been shown to benefit student veterans will be outlined next, including: student veteran groups, a dedicated space for veterans, and mentoring.

**Institutional Policy and Services.** Institutional policies that support student veterans include tuition policies, a separate orientation, non-traditional delivery of curriculum, and
assistance filing for financial benefits. Many schools have developed tuition policies such as refunds for students called to active duty. A separate orientation designed to address student veterans’ specific barriers is very beneficial for these students. Non-traditional delivery of curriculum supports veterans who have family or work obligations. Filing for financial benefits for which student veterans qualify can be very confusing and may require professional support.

**Tuition Policies.** Many schools have tuition policies designed specifically to support veterans. Cook and Kim (2009) found that tuition refunds for students who are called to active duty are very prevalent, with over 80 percent of the 723 institutions they surveyed having these policies. Additionally, discounted tuition rates for military personnel were available at many schools, while others have in state tuition rates for military personnel regardless of their home of record (Cook & Kim, 2009; Mangan, 2009). One school allowed veterans to pay for their books in installments over the semester (Summerlot et al., 2009), and another institution even offered free housing to student veterans (Mangan, 2009). An additional program that veterans may take advantage of is the Yellow Ribbon Program through which veterans can attend schools where the tuition rate is higher than the GI Bill allowance and the school agrees to pay the difference (U. S. Department of Veterans Affairs, n. d.).

**Separate Orientation.** A separate university orientation specifically geared toward student veterans may be necessary to address their unique concerns (American Council on Education, 2010; Persky, 2009). These sessions could cover such topics as GI Bill registration and requirements for compliance, student veteran organizations on campus, student advisors and early registration. Additionally, this orientation may provide a means for institutions to identify the population of veterans who are not using the GI Bill (DiRamio et al., 2008). Finally, this orientation would also be a good opportunity for student veterans to meet other student veterans.
Meeting other veterans who are entering college at the same time helps establish a support network for those veterans who have barriers transitioning from the military to higher education. Additionally, having these sessions run by current student veterans at the institution was recommended in several studies (Ackerman et al., 2009; Summerlot et al., 2009).

**Nontraditional Delivery of Curriculum.** Because many student veterans have obligations beyond school, nontraditional methods of instruction benefit this group. Many veterans will have additional demands on their time such as work or family obligations (Cook & Kim, 2009; Main et al., 2016; Summerlot et al., 2009). One veteran student interviewed by Ely (2008) described how he had been working seven days a week for the past nine months. Having the flexibility to take evening or online classes is a great benefit to these veterans. Additionally, for those members of the National Guard or Reserves who are called to active duty, the ability to continue their education while deployed is very beneficial (Mangan, 2009; Rumann & Hamrick, 2010). While many institutions offer online courses, Kansas State University adopted an approach to assist veterans entering their electrical engineering program that went beyond online courses. This program allowed veterans to take an assessment of their knowledge in subjects like mathematics, provided online tutorials for areas in which they were weak, and gave them the ability to receive credit by examination once they enrolled, allowing the students to accelerate their time to graduation (Soldan et al., 2013).

**Financial Benefits.** Student veterans often required assistance in applying for financial benefits. One student veteran interviewed by Cook and Kim (2009) expressed concern that there was so many different programs available that an expert was required to help make sure student veterans were getting all the benefits available to them. In addition to not knowing what benefits for which they qualify, students were frustrated by the paperwork involved in receiving their
benefits (DiRamio et al., 2008; Elliott et al., 2011). The majority of institutions, over two thirds of those surveyed by Cook and Kim (2009), have recognized the challenges associated with applying for financial benefits and have a dedicated individual or office to assist student veterans with the process.

**Academic Success.** Veteran student academic success can be improved through staff and faculty training, academic advising and study skill instruction. Staff and faculty training on veteran barriers and facilitators can help alleviate challenges student veterans face. Academic advisors who are familiar with veteran student requirements, such as the need to take degree-pursuant classes to qualify for GI Bill benefits, are an asset for these students. Classes on study skills are another important tool for student veterans.

**Staff and faculty training.** The need for staff and faculty training in working with student veterans was emphasized in several articles (Elliott et al., 2011; Persky, 2009; Steele, Salcedo, & Coley, 2010). One area that many felt faculty and staff needed training in was sensitivity training. As was already mentioned, students often are asked inappropriate and demeaning questions by other students as well as by faculty and staff. This training would help to alleviate these types of questions. This training could also highlight the positive facilitators that veterans bring to the campus and classroom (Dalcher, 2014). Cook and Kim (2009) found that less than half the schools surveyed had such programs for staff and faculty training.

**Academic Advising.** The need for academic advisors who are familiar with veteran student barriers was emphasized as important for student veterans to be successful. Schlossberg (1989), whose research focuses on transitions, emphasized the importance of academic advising for adult learners. These students already feel behind in their studies compared to traditional students, but they also have work experience that may translate into academic credit. There are
several areas that academic advisors for veterans need specialized training: knowledge of institutional policies on accepting credit for military training is one area, and a second area is knowledge of institutional policy on helping students withdraw from the institution if they are called to active duty. Related to this is helping students re-enroll after deployment. Finally, knowledge of what students must do to remain eligible for their veteran’s benefits is very important (Cahill, 2013; DiRamio et al., 2008). A veteran student who spoke with Persky (2009) emphasized the importance of an academic advisor providing career guidance and helping get military credits accepted. The additional needs of student veterans strongly indicate the requirement for a specially trained academic advisor to ensure they receive all the assistance the institution has available for them to be successful academically.

**Study Skills.** Instruction on study skills may be required for student veterans who have not been in school for extended periods. A student who had been deployed with the Reserves commented that he forgot how to study while deployed and his grades suffered as a result (Ackerman et al., 2009). The need for instruction on study skills has not gone unnoticed by many institutions. As Cahill (2013) noted, classes on study skills, along with assistance with financial benefits and peer support, were the most prevalent supports provided to student veterans.

**Social.** Student veteran groups, a dedicated space for veterans and a mentoring program are social supports that colleges may provide to student veterans. Student veteran groups provide a setting where veterans feel free to discuss the barriers they are experiencing. Similarly, a dedicated space for veterans to gather provides an environment where they feel safe. A mentoring program consisting of veterans mentoring veterans has proven to be an effective means of assisting the transition to campus.
**Student veteran groups.** Student veteran groups on campus provide a means for veterans to ease the transition from the military to college (Ackerman et al., 2009; Cook & Kim, 2009). The experiences they had in the military taught them to rely on each other for safety and security. Once they transition to college, they often look for the same support from other student veterans (Summerlot et al., 2009). As one veteran explained it was important to be around other veterans who had similar experiences as opposed to other students who came straight out of high school with very limited experience. These groups also can advocate for change within the institution (Summerlot et al., 2009). One national group that exists is the Student Veterans of America. This group takes a very active role in advocating for student veterans across the United States and provides the opportunity for both social and career networking (Steele et al., 2010; Summerlot et al., 2009).

**Dedicated Space for Veterans.** A dedicated space on campus for veterans is highly desirable to many student veterans (Elliott et al., 2011; Persky, 2009). These spaces may have two distinct purposes. First, as recommended by the American Council on Education (2011), such a space can serve as a one-stop shop for veterans to get their required paperwork completed to receive their benefits. Perhaps more importantly, they can serve as a space where veterans feel welcome (Persky, 2009). The second function is normally classified as a veterans lounge. This space can serve as a place for student veterans to study or to socialize with one another. Unfortunately for student veterans, only 12 percent of the institutions surveyed by Cook and Kim (2009) had a veterans lounge.

**Mentoring.** A mentoring program can be very useful for veterans transitioning from the military to college (DiRamio et al., 2008). Teaming experienced veteran students with new veteran students gives the new students people on whom they can rely on for help with the
transition. The mentor can also act as part of an early warning system should the new student have problems transitioning (Summerlot et al., 2009). Additionally, helping new student veterans become part of the campus community through a mentorship program can be one of the keys to increasing retention among student veterans (Steele et al., 2010).

**Summary**

In this section barriers and facilitators that student veterans encounter that other students do not were addressed in four categories: personal, social, academic, and institutional. Within the personal category barriers included: TBI and PTSD, self-direction, loss of purpose, and hiding veteran status. Within the personal category of facilitators, maturity and mission focus were discussed. From a social aspect, student veterans face barriers in the areas of anger at the lack of discipline in traditional students and being uncomfortable in crowds. From a social aspect, facilitators of experience with diversity and teamwork were highlighted. In the area of academic barriers, two areas addressed were, college credit for military training and diminished study skills. Academic facilitators student veterans possess were addressed from the perspectives of time management, engineering skills, and discipline.

Institutional barriers included having to deal with insensitive comments, and barriers that arise when veterans have to withdraw due to deployment and re-enrollment after deployment. Academic facilitators that universities can provide to assist student veterans were discussed in three areas: institutional policy, academic success, and social. Within the area of institutional policies tuition policies, separate orientations, nontraditional delivery of curriculum, and financial benefits were discussed. Areas that schools can provide support to veterans with their academics included staff and faculty training, academic advising, and study skills. The social support that schools may provide were discussed in the following areas: student veteran groups, dedicated space for veterans, and mentoring programs.
Model Programs

Many schools have special programs for student veterans. In this section several programs that have been highlighted in the literature will be discussed. Cahill (2013) focused on The University of Maryland University College, which offers dedicated academic advisors, a veteran’s resource center, and reduced tuition rates for military service members and their families (The University of Maryland University College, n. d.). DiRamio and Jarvis (2011) featured Arkansas State. Arkansas State has put their emphasis on wounded veterans, developing the Breck Pride Center in their health sciences center. Through this center, wounded veterans can receive career counseling, academic advising, physical and mental rehabilitation services, and assistance with receiving their benefits (Arkansas State University, n. d.). Dalcher (2014) included the Western Illinois University and Western Michigan University as model programs. Western Illinois University will accept any service member once they leave the military, regardless of prior college performance. They have a dedicated veteran’s resource center where veterans can receive assistance with obtaining military transcripts, housing, receiving financial benefits and refunds for tuition due to deployment (Western Illinois University, n. d.). Western Michigan University offers a separate orientation for student veterans as well as a two credit military transition course (Western Michigan University, n. d.). Persky (2009) highlighted the Cleveland State University program which has a special orientation group for veterans conducted by other student veterans. It also offers veteran-to-veteran tutoring, a mentorship program and a large veterans’ facility with study rooms, a kitchen and a dayroom (Cleveland State University, n. d.). These are only a few examples of the programs highlighted in the literature, but they provide an overview of the wide variety of programs that have been established at higher education institutions across the United States.
Conclusion

This section began with the definition of a veteran. While this would seem straightforward there were several definitions of a veteran used in previous studies. West Virginia University does not have a standard definition of a veteran (P. Lipscomb, personal communication, June 3, 2022). Therefore, the definition used in this study is: “For the purposes of this study, a student veteran is an enrolled college student or recent graduate who served or serves in the United States Armed Forces.” In the next section, the use of theories by previous researchers developed by Schlossberg (Schlossberg et al., 1989) and Magolda (2014) used to examine transition were discussed. Additionally, the use of Tinto’s (1993) theory which focused on retention was covered.

In the next two sections barriers and facilitators to academics were discussed. First the barriers and facilitators to nontraditional students in general were reviewed. These barriers and facilitators were categorized as one of the following, personal, social, academic, or institutional. After the discussion of nontraditional student barriers and facilitators were explored those of student veterans were noted, using the same categories mentioned above. Finally, model programs from The University of Maryland University College, Arkansas State, Western Illinois University, Western Michigan University and Cleveland State University were discussed.

The previous research conducted has focused on student veterans in general. This research identified barriers and facilitators to their academics that student veterans in general face. This study will focus on student veterans in engineering majors. By comparing the results of this study to the literature, recommendations are made on programs to help the student veteran engineering population. Additionally, this study looks at environments that influence student veterans which had not been done previously.
Chapter Three Method

In this chapter, I describe the theoretical perspectives used in the study and my researcher positionality. Next, I discuss the methodology and how supports the research. Finally, I describe the methods, including participants, sampling procedures, data collection, and data analyses methods.

Theoretical Perspective

In this study, I drew on Social Constructionism, Discourse as described by Gee (2011), and part of Ecological Systems Theory by as described by Neal and Neal (2013). These different theoretical lenses combine to provide a picture of how student veteran engineering students describe their experiences as engineering students and how their service has impacted it.

Constructionism

Constructionism is the belief that “…all knowledge and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, as developed and transmitted with an essentially social context” (Crotty, 2015, p. 42). Crotty further explains that constructionism is based on all meanings being constructed when people engage with the world they are interpreting. Additionally, according to constructionism meaning is not created but constructed from the world and objects in the world.

What is particularly relevant in this study is the concept of Social Constructionism. Social Constructionism views culture as “the source rather than the result of human thought and behavior” (Crotty, 2015, p. 53). Social constructionism according to Flick (2009) is used to “examine the relationship to reality by dealing with the constructive processes in approaching it” (p.69). He further explains that “the realities we study are social products of the actors, of
interactions, and institutions” (p. 70). The participants in this study have been exposed to a culture, the military, which provides experiences that the typical engineering student has not had. How the participants use those experiences in the construction of knowledge as engineering students was a focus of this study. Jost and Kruglanski (2002) credit social constructionist with “ushering greater open-mindedness with regard to unconventional research procedures, most especially the increased acceptance of discursive, narrative and other qualitative techniques” (p. 176). This facet of social constructionism fits well with the approach taken in this study.

**Discourse**

Gee (2011) writes that people use language to build identities and use different varieties of languages in different settings. Gee (2011) lists seven building tasks of language: significance, practices (activities), identities, relationships, politics (the distribution of social goods), connections, and sign systems and knowledge. In this study, identities, veteran versus student, and relationships with other students are of special interest. Gee emphasizes that recognition is the key to discourse. He states that “If you put language, action, beliefs, symbols, objects, tools and places together in such a way that others recognize you as a particular type of who (identity) engage in a particular type of what (activity), here and not, they you have pulled off a Discourse ….” (Gee, 2011, p. 35). For student veterans who have come from a military culture where the language is much different, how they use language to articulate, accept or reject identities provides insight into their experiences as engineering students.

**Ecological Systems Theory**

Neal and Neal (2013) proposed a modification to the Ecological Systems Theory developed by Urie Bronfenbrenner (1979). They argued that rather than nested, the systems in
Ecological Systems Theory should be networked. Their position was that a nested approach obscures the relationship between each of the systems in the model. They argued that a networked arrangement shifts the emphasis from the setting to the social interaction between people. In this networked model, they proposed new definitions, based on patterns of social interactions, for each of the systems originally proposed by Bronfenbrenner. Neal and Neal (2013) retained the categories of systems which are: a microsystem, a mesosystem, an exosystem, and a macrosystem. A comparison of the two are shown in table 1 (Neal and Neal, 2013, p. 724).
### Table 1

<table>
<thead>
<tr>
<th>Construct</th>
<th>Nested (From Bronfenbrenner, 1979)</th>
<th>Networked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecological Environment</td>
<td>“…a nested arrangement of structures, each contained within the next.” (p. 22)</td>
<td>…an overlapping arrangement of structures, each directly or indirectly connected to the others by the direct and indirect social interaction of their participants.</td>
</tr>
<tr>
<td>Microsystem</td>
<td>“…a pattern of activities, roles and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics.” (p. 22)</td>
<td>…a setting – that is, a set of people engaged in social interaction that includes the focal individual.</td>
</tr>
<tr>
<td>Mesosystem</td>
<td>“…the interrelations among two or more settings in which the developing person actively participates.” (p. 25)</td>
<td>…a social interaction between participants in different settings that both include the focal individual.</td>
</tr>
<tr>
<td>Exosystem</td>
<td>“…one or more settings that do not involve the developing person as an active participant, but in which events occur that affect, or are affected by what happens in the setting containing the developing person.” (p. 25)</td>
<td>…a setting that is – a set of people engaged in social interaction that does not include, but whose participants interact directly or indirectly with, the focal individual.</td>
</tr>
</tbody>
</table>

**Comparison between Nested and Networked Ecological Systems**

**Note.** This table compares original nested Ecological Systems Theory developed by Bronfenbrenner with a modified networked version developed by Neal and Neal. Adapted from Neal, J. W. and Neal, Z.P. (2013). Nested or networked? Future directions for ecological systems theory. *Social Development* 22(4), p. 724

[https://discovery.ebsco.com/c/y2m5o4/viewer/pdf/xvrofow3tv](https://discovery.ebsco.com/c/y2m5o4/viewer/pdf/xvrofow3tv)

An example of how Neal and Neal’s proposed networked systems for a child would look graphically shown in figure 4 (Neal & Neal, 2013, p. 730).
Figure 4

Networked Model of Ecological Systems


https://discovery.ebsco.com/c/y2m5o4/viewer/pdf/xvrofow3tv

This is contrasted with how Bronfenbrenner (1979) conceived the ecological environment “...as a set of nested structures, each inside the next, like a set of Russian dolls” shown graphically in figure 5 (p. 3).
There are two types of transitions that serve as a catalyst for developmental change in an individual that make the ecological systems theory especially applicable. The first transition is a normative change, for example, entry into school. The second transition is a nonnormative change, for example, death of a family member (Bronfenbrenner, 1986). The student veterans clearly underwent normative changes when they left the military and began college. The formal application of ecological systems theory is beyond the scope of this study. For example, one aspect is that it is not longitudinal (Trudge et al., 2009). This model is used in this study, in order to determine the student veterans’ “…points of intervention that lie beyond the individual” (Neal
& Neal, 2013, p. 723). For this study points of intervention are people that student veterans interact with on a regular basis for example professors, academic advisors, and job supervisors.

**Researcher Positionality**

Yin (2016) states that qualitative research requires disclosure of the researcher’s roles and traits that may affect a study. In accordance with the concept of disclosure, I feel that I am uniquely suited to conduct this research because of my background. I graduated from the United States Military Academy at West Point in 1984. At that time there were no majors, only areas of concentration at West Point. My area of concentration was chemistry; however, we were still required to take numerous engineering classes. For example I took Statics and Dynamics, Mechanics of Materials, Thermodynamics and Electrical Engineering. This provided me with a strong background in what is required academically in engineering majors. Additionally, when completing my Master’s Degree on active duty, I realized that my time at West Point and service in the Army had instilled in me competencies that were beneficial in academics. Some of the competencies that I realized included: a strong work ethic, a mission type focus on completing my work, the ability to work and lead others in group assignments, to name a few. When I retired from the Army after 22 years of service, I began working as a program coordinator in the Department of Mechanical and Aerospace Engineering in the Statler College (MAE) at West Virginia University. One of my major responsibilities in this position was academic advising. At one time I was an advisor for over 500 students. While working in this job I dealt with numerous student veterans, some doing very well and others struggling. Because of my background I was able to relate very well with these students and wanted to explore whether there were any ways that their military service could help them with their academic endeavors as I felt it had helped me in mine. Additionally, I have served on the WVU Veterans Advisory Committee for over ten
years. This committee is responsible for addressing student veterans’ concerns with the university administration.

**Methodology**

Narrative inquiry fits this study well because of the stories student veterans told using their timelines. According to Clandinin and Connelly (2000), “Simply stated …narrative inquiry is stories lived and told” (p. 20). Clandinin and Connelly (2000) trace key concepts of narrative inquiry back to the work of John Dewey. They state that experience is key in narrative inquiry. They use Dewey’s criterion of experience having continuity, stating that “… experiences grow out of other experiences, and experiences lead to further experiences” (p.3). This fits well with my epistemology that knowledge is created through social interactions.

Clandinin and Huber (2002) discuss identity, writing that it is a story to live by and that, “Stories to live by are shaped in places and lived in places” (p.161). The experiences of student veterans, many of whom lived in foreign countries in austere conditions, certainly played a part in shaping their current identity. These experiences are vastly different than the average college student. According to Huber et al. (2006), relationships between researchers and participants are very important in narrative inquiry. Because of my military background, the participants and I had an immediate bond. This bond was much deeper with those students whom I advised but was present even with the students I met only during the interviews. The experiences of the person conducting the research are part of the narrative inquiry. As Clendenin (2006) writes, “Narrative inquires cannot bracket themselves out of the inquiry but rather need to find ways to inquire into participant’s experiences, their own experiences as well as the co-constructed experiences developed through the relation inquiry process” (p. 47).
Clandinin and Connelly (2000) return to Dewey and his concept of interaction when they discuss the four directions in an inquiry: Inward and outward, backward and forward. Looking inward they look at internal conditions for feelings and hopes. Outward concerns the environment. Backward and forward refer to the past, present and future. Through the use of a timeline student veterans told stories about the past and present, while the semi-structured interviews provided stories more focused on the present and future. Additionally, the timeline lets us look at their development over time which agrees with Atkinson’s (2001) description of the goal of narrative approach as “…to learn as much as possible about how one person views his or her own development over time…” (p. 124). This methodological approach was used throughout the study as a lens to view the student veteran participants and more specifically to create the four stories of student veterans contained in chapter four.

Participants

Student Veteran Participants Overview

There are seven departments within the Statler College. Ideally, participants would have included one to two students from each department; however, only three of the departments were represented in the study. Of the remaining departments without representation, three had only one student while the other department had four students. (R. Sigler, personal communication, February 15, 2022). Twelve male student veterans were interviewed. The average age of the student veterans was 29 and the median age was 27. Seven of the student veterans majored in mechanical engineering, while two of the veteran students had dual majors in mechanical and aerospace engineering. One student veteran majored in electrical engineering, one student majored in petroleum and natural gas engineering, and one student majored in aerospace engineering. Demographic data for the student veteran participants is presented in table 2.
### Table 2

**Student Veterans' Demographic Data**

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Race</th>
<th>Gender</th>
<th>Branch Of Service</th>
<th>Years in Service</th>
<th>Highest Rank</th>
<th>Major</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>27</td>
<td>White</td>
<td>Male</td>
<td>Air Force</td>
<td>9</td>
<td>E-6</td>
<td>Aerospace</td>
<td>3.6</td>
</tr>
<tr>
<td>Bravo</td>
<td>27</td>
<td>White</td>
<td>Male</td>
<td>Army</td>
<td>3.25</td>
<td>E-4</td>
<td>Mechanical</td>
<td>2.8</td>
</tr>
<tr>
<td>Charlie</td>
<td>31</td>
<td>White</td>
<td>Male</td>
<td>Army</td>
<td>3.5</td>
<td>E-4</td>
<td>Mechanical</td>
<td>2.84</td>
</tr>
<tr>
<td>Delta</td>
<td>27</td>
<td>White</td>
<td>Male</td>
<td>Army</td>
<td>5</td>
<td>E-5</td>
<td>Mechanical and Aerospace</td>
<td>2.75</td>
</tr>
<tr>
<td>Echo</td>
<td>24</td>
<td>White</td>
<td>Male</td>
<td>Air Force</td>
<td>5</td>
<td>E-5</td>
<td>Mechanical and Aerospace</td>
<td>2.81</td>
</tr>
<tr>
<td>Foxtrot</td>
<td>45</td>
<td>White</td>
<td>Male</td>
<td>Marines</td>
<td>23</td>
<td>CWO-3</td>
<td>Mechanical</td>
<td>3.0</td>
</tr>
<tr>
<td>Golf</td>
<td>30</td>
<td>White</td>
<td>Male</td>
<td>Navy</td>
<td>9.5</td>
<td>E-6</td>
<td>Mechanical</td>
<td>3.52</td>
</tr>
<tr>
<td>Hotel</td>
<td>22</td>
<td>White</td>
<td>Male</td>
<td>Air Force</td>
<td>2.5</td>
<td>E-3</td>
<td>Mechanical</td>
<td>3.66</td>
</tr>
<tr>
<td>Juliet</td>
<td>31</td>
<td>White</td>
<td>Male</td>
<td>Navy</td>
<td>8.5</td>
<td>E-6</td>
<td>Mechanical</td>
<td>3.35</td>
</tr>
<tr>
<td>Lima</td>
<td>31</td>
<td>White</td>
<td>Male</td>
<td>Marines</td>
<td>5</td>
<td>E-5</td>
<td>Electrical</td>
<td>3.3</td>
</tr>
<tr>
<td>Oscar</td>
<td>26</td>
<td>Latino</td>
<td>Male</td>
<td>Navy</td>
<td>5</td>
<td>E-5</td>
<td>Electrical</td>
<td>2.5</td>
</tr>
<tr>
<td>Tango</td>
<td>26</td>
<td>White</td>
<td>Male</td>
<td>Army</td>
<td>5</td>
<td>E-5</td>
<td>Petroleum and Natural Gas</td>
<td>3.14</td>
</tr>
</tbody>
</table>

*Note.* This table summarizes the demographic data collected from student veterans in this study.

**Individual Student Veterans**

Student Alpha is a 27 year old white male majoring in aerospace engineering. He had attended college prior to his military service. He is currently in the Air National Guard working as a crew chief on C-130 aircraft. Student Bravo is a 27 year old white male majoring in mechanical engineering. He served in the Army for a little over three years in the infantry. He had attended college previously and was almost through a mechanical engineering degree when he decided to join the Army. Student Charley is a 31 year old white male majoring in mechanical
engineering. He served in the Army for three and a half years in the infantry. He served one tour in Afghanistan. Student Delta is a 27 year old white male. He is dual majoring in mechanical and aerospace engineering. He served in the infantry in the Ranger Regiment. He attended college for two years prior to enlisting and was actually encouraged by the Dean of his college to enlist if that is what he wanted to do. Student Echo is a 24 year old white male pursuing a dual major in mechanical and aerospace engineering. He is a team chief in the Air National Guard. Someone from his family had been in the same Air National Guard unit continuously since 1957. He spent one deployment in Kuwait where he was responsible for supervising a team that loaded aircraft. Student Foxtrot is a 45 year old white male who completed his undergraduate degree in mechanical engineering at WVU and is currently pursuing a master’s degree in mechanical engineering. He served for 23 years in the Marine Corps and is the only prior commissioned officer in this study. During his career he was deployed several times and retired after being in charge of marksmanship training at Quantico where he ran the most successful program in their history. Student Golf is a 30 year old white mail who was in the Navy for nine and a half years. He is majoring in mechanical engineering. In the Navy he was an aircraft mechanic. He spoke to several civilian engineers working on Navy aircraft before deciding to leave the Navy and get an engineering degree. Student Hotel is a 22 year old white male majoring in mechanical engineering. He is a crew chief in the Air National Guard. Prior to WVU he attended community college. He has had one deployment to Qatar. Student Juliet is a 31 year old white male, who recently graduated with a degree mechanical engineering. He spent eight and a half years in the Navy as a nuclear operator on submarines. He is currently working at Bechtel Plant Machinery Incorporated in their Reactor Plant Heavy Department. Student Lima is a 31 year old white male majoring in electrical engineering. He spent five years in the Marine Corps as a communications
intelligence collector. He had two deployments to Afghanistan while in the Marine Corps. He worked for Boeing while completing his degree and has a job with Northrup Grumman after graduation. Student Oscar is a 26 year old Latino majoring in electrical engineering. He spent five years in the Navy in Naval Special Warfare as an electronics technician. During his time in the Navy, he spent time in Kenya, Somalia and Afghanistan. Student Tango is a 26 year old while male majoring in petroleum and natural gas engineering. He was in the Army for five years, in the infantry stationed at Fort Richardson Alaska. He attended college for two years prior to enlisting. He spent a summer as an intern for an oil and gas company working at fracking sites and may work for them after graduation.

**Professor Participants**

Professors were interviewed to provide a different perspective on student veterans and as a means of triangulation. Four of the professors held the rank of full professor and one was an associate professor. Two of the professors were from the Mechanical and Aerospace Engineering Department and three of the professors were from the Industrial Engineering Department. Additionally three other professors where contacted for interviews two from the Chemical Engineering and Biomedical Engineering Department and one from the Civil Engineering Department. However, these three professors felt they did not have enough experience with student veterans to agree to participate. While only two departments were represented, two of the professors had experience with students from all majors in the college. One or the professors taught the Orientation to Engineering course which contains students from all majors. Another professor served as an Associate Dean and dealt with students from all majors in that capacity. The average number of years the professors had been teaching was 34 while the median number
of years teaching was 31. None of the professors surveyed had served in the military. The demographic data for the professors is summarized in table 3.

**Table 3**

*Professors’ Demographic Data*

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Department</th>
<th>Years Teaching</th>
<th>Rank</th>
<th>Military Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>M</td>
<td>Industrial Engineering</td>
<td>34</td>
<td>Professor</td>
<td>No</td>
</tr>
<tr>
<td>Kilo</td>
<td>M</td>
<td>Industrial Engineering</td>
<td>31</td>
<td>Professor</td>
<td>No</td>
</tr>
<tr>
<td>Mike</td>
<td>M</td>
<td>Industrial Engineering</td>
<td>52</td>
<td>Professor</td>
<td>No</td>
</tr>
<tr>
<td>November</td>
<td>M</td>
<td>Mechanical and Aerospace Engineering</td>
<td>28</td>
<td>Professor</td>
<td>No</td>
</tr>
<tr>
<td>Sierra</td>
<td>M</td>
<td>Mechanical and Aerospace Engineering</td>
<td>24</td>
<td>Associate Professor</td>
<td>No</td>
</tr>
</tbody>
</table>

*Note.* This table summarizes demographic data collected from professors in this study.

**Sampling Procedures**

*Student Veterans*

Participants were recruited primarily through email. Emails were sent to engineering student veterans identified by the Center for Veteran, Military and Family Programs as receiving GI Bill benefits. As with many institutions, at West Virginia University it is very difficult to identify student veterans who are not receiving GI Bill benefits because they are under no obligation to identify as veterans. However, I did attempt to identify engineering student veterans who may not be receiving BI Bill benefits through the President of the Student Veterans Club but was unsuccessful.
One approach to participant selection is to conduct an initial survey of those willing to participate to determine their suitability for the study. Because the engineering student veteran population was so small I chose not to take this approach, rather allowing all that were interested to participate. I did attempt to use the snowballing technique suggested by Voight et al. (2012) to identify additional participants. In snowballing, participants who agree to interview are asked to suggest other participants. Through this method I did identify one additional participant. I was surprised that the majority of the engineering student veterans did not appear to know other engineering student veterans. Additionally, I had the staff of the Center for Veteran, Military and Family Programs send out an email requesting student veterans to participate in my study; unfortunately, this did not yield any additional participants.

Professors

In addition to the student veterans interviewed, five professors from the Statler College were interviewed. Professors who appeared to have experience with veteran students, based upon my experience as the Statler College Veterans Representative, were emailed to determine if they would participate in the study. The email sent to the professors was similar to the email sent to student veterans including, the purpose of the study, what would be required of participants, and a request to email me if interested in participating.

Methods

Clandinin and Connelly (2000) discussed the four directions in an inquiry: Inward and outward, backward and forward. Looking inward they look at internal conditions for feelings and hopes. Outward concerns the environment. Backward and forward refer to the past, present and future. Each of these directions were addressed in this study through the data sources used.
Data Sources and Collection

Data was collected using different methods for student veterans and professors. For student veteran participants, data was collected through the use of graphic elicitation, a reflexive semi-structured interview and a background questionnaire. For professor participants data was collected through a reflexive semi-structured interview and a background questionnaire. Through the use of a timeline student veterans told stories about the past and present, while the semi-structured interviews provided stories more focused on the present and future. Additionally, the timeline provided a picture at their development over time which agrees with Atkinson’s (2001) description of the goal of narrative approach as “...to learn as much as possible about how one person views his or her own development over time….” (p. 124). The data sources and collection methods are further elaborated in the following sections.

Interviews

Vogt et al. (2012) list criteria for using an interview versus other forms of research such as a survey or experiment. Their criteria include: when an in depth exploration of participants’ meaning is key, when you can gain access to participants willing to talk, when you want to generate new hypothesis versus testing an existing one. All of these criteria apply to my research and validate my choice of conducting interviews.

The interview sessions were tape recorded. The original intention was to conduct all interviews in person. Unfortunately, due to restrictions caused by COVID, seven of the student veteran meetings were conducted using Zoom meetings. Additionally, three of the professor interviews were conducted by telephone. While this did not appear to have a major impact, some of the visual cues that would be present during an in person interview were not present in the Zoom meetings and no visual cues were available during the telephone interviews. I only
conducted one interview session with each student because of my concern with taking time away from their studies. This concern was highlighted during the first interview I conducted when the student veteran told me that he was literally so busy that he was scheduling every hour of his day in a planner.

**Graphic Elicitation.** Graphic elicitation is an appropriate technique to help participants recall memories that they might have otherwise suppressed. This method was used only with student veterans. While not all student veterans will have been in combat, some of the students had been, and this technique is suited to help recall experiences they may not otherwise remember. Graphic elicitation was used in the form of a timeline with the student participants. These timelines are available in appendix A. Edwards and Holland (2013) state that graphic elicitation shifts the authority in the interview from the interviewer to the person being interviewed. This shift in authority helps overcome the concerns I have with my position in the engineering college and as a retired Army officer. Graphic elicitation involves the participants taking an active part in the interview by representing something visually. Graphic elicitation techniques include self-portrait, relational maps and timelines (Bagnoli, 2009). Advantages of graphic elicitation techniques include affording time to reflect, an ability to represent items that might be repressed, and the ability to triangulate interview responses. Drawbacks of graphic elicitation techniques include the additional time that is required for participants to respond and the fact that they are very subjective. Clarkson (2006) also points out that when using graphic elicitation techniques, the interviewer could focus too much on what is represented graphically and miss important information revealed during the interview. The use of graphic elicitation was used to uncover lessons learned or competencies developed from students’ military service that have impacted their experiences as engineering students. Graphic elicitation techniques have
their roots in psychoanalysis (Bagnoli, 2009). I am not trained as a counselor, and there was a possibility that recalling events from military service would result in participants recalling events that were traumatic. I had a list of resources that participants could use if they need professional help in dealing with these memories. Fortunately none of the participants required use of these resources as a result of the interviews.

Timelines were chosen as the graphic elicitation method because military members are used to doing timelines. As an example, if one is planning to go on a convoy, he might have a timeline that contained: the time to report for duty, time to draw weapons, time to complete maintenance check on vehicles, time to line up vehicles and time to depart. I developed my own timeline and share a portion of the timeline with the participant prior to having the participant develop his own time line. My timeline was built around units that I had served in and what I thought the major lessons were from each unit. This timeline is available in appendix B. I informed participants that they could complete the timeline by unit or date, whatever was most appropriate for them. Once the participant completed his timeline, I shared my timeline in its entirety. After sharing my timeline I asked participants to share their timeline. Once the timelines were discussed we moved into the semi-structured reflexive interview.

**Semi-Structured Reflexive Interview.** The interviews conducted in this study were semi-structured, in that there were a series of questions asked of all participants and a set of questions that could be used at the discretion of the researcher to probe further into responses if desired. Galletta (2013) describes the value of the semi-structured interview as follows, “The semi-structured interview, valued for its accommodation to a range of research goals, typically reflects variation in its use of questions, prompts, and accompanying tools and resources to draw the participant more fully into the topic under study” (p. 45).
Holstien and Gubrium (2003) discuss reflexive interviewing, a means of having the interviewer more involved in the interview. This technique is especially useful in creating a bond with the person being interviewed. Unlike many forms of interview, where the interviewer simply asks questions of the participant, in the reflexive interview the interviewer becomes part of the exchange. This fits well with my epistemology which leans toward constructionism. Because I served 22 years on active duty with the Army, I feel that I can relate well to student veterans. One of the advantages of the reflexive interview is that it shifts the power from the interviewer to the participant. However, one of the drawbacks of the reflexive interview is that the interviewer can insert bias into the interview. To minimize any insertion of bias, while I shared some of my experiences as a student veteran, I was clear that I was not an engineering student and their experiences were undoubtedly different from mine. Interviewing both students and professors provides a measure of triangulation which contributed to the validity of the study. My personal experience as a veteran student and instructor also provides another method of validation. Finally, the transcripts of interviews were member checked for accuracy by the participants.

**Student Veterans’ Interview Questions.** Flick (2009) addressed key points to evaluate questions selected for an interview. I will address the first point that Flick proposed. “1. Why did you ask this specific question?” (p. 170). Actual questions are included in appendix C. The first three questions were asked to provide background that would not be provided using a timeline. The next question was asked to have student veterans consider what were the experiences that stood out for them in college. Questions five, six and seven focused on college success, and I hoped to bring out competencies that student veterans had developed through their service that made them successful. Challenges and how they were overcome was the focus of questions
eight, nine and ten. Military service is full of challenges, and I hoped that how student veterans had learned to deal with challenges in the military would be applied to challenges in college.

Questions eleven and twelve deal with stress and stress management. Military service, especially deployments, can be incredibly stressful. How student veterans dealt with stress in the military may be useful in academic settings. The next question dealt with support networks. Support networks for student veterans are mentioned in the literature as very beneficial. I wanted to determine if students were aware of and using support networks at WVU such as the student veterans’ club. Question fourteen was focused on time management. Time management skills are highlighted in the literature as skills most veterans develop as a result of their service. I wanted to determine if the student veterans were aware of these skills and any tools they may use in managing their time. Questions fifteen and sixteen focused on team work. The ability of student veterans to work on and lead teams is prevalent in the literature. Much of the engineering curriculum requires working on teams. I wanted to determine if the abilities developed during student veterans’ military service translated to working on and leading team projects in the engineering curriculum.

The next question focused on resources for student veterans at WVU. Much of the effort of the WVU Veterans Advisory Committee was focused on providing resources to student veterans. Examples of this effort include availability of tutors, veteran friendly classes, and dedicated study areas. I wanted to determine if these resources were being utilized and were effective. In the follow up question I wanted to determine if there were other resources that should be recommended to the administration in support student veterans at WVU. Questions nineteen through twenty-one are focused on what student veterans see in their future. The
answers to these questions help to look forward as Clandinin and Connelly (2000) describe in narrative inquiry.

**Professors’ Interview Questions.** The actual questions used are included in appendix D. In addition to interviewing students I interviewed five faculty members in the College of Engineering and Mineral Resources. This group provides another perspective on the experiences of veteran engineering students specifically related to their experiences in engineering classes. These interviews provide insights into barriers or facilitators these students encounter that may not be apparent to the student. The interview with professors were less of a reflexive interview because I have very little experience teaching engineering classes. Here I will address why I chose each question for the professors.

In the first question, I wanted to determine how the professors felt student veterans had performed in their classes in general. In the next question I wanted to determine if the fact that student veterans have a wider range of experiences than most college students was coming out in engineering classes. The literature describes instances of student veterans having barriers with other less mature students. In question three I wanted to determine if this was present in engineering classes at WVU. In the fourth question I wanted to determine from the professors’ perspective how student veterans in their classes managed their time. Because student veterans may have more leadership experience than their non-veteran peers; in the next question I wanted to determine if this was evident in the group work conducted in engineering classes at WVU. Question six is a general question to determine if there are facilitators or deficiencies noticed by professors that have not been addressed in the literature. Because the literature does not differentiate between undergraduate and graduate student veterans. In the final question I wanted to determine if our professors had noticed any differences in the two groups.
Data Analysis

Coding

Yin (2016) states that “...most of all, qualitative analysis challenges you to find patterns in you data” (p. 202). One of the ways to identify these patterns is through coding. Coding according to Saldana and Omasta (2018), is “…most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing and/or evocative attribute for a portion of language-based or visual data” (p. 120). The data was transcribed and initially coded using the In Vivo coding method. According to Miles et al. (2014), this coding method is appropriate for research that prioritizes the participant’s voice. This method codes according to the actual language used by the participants themselves.

Secondary coding was accomplished through Focused Coding to develop categories by clustering data that are similarly coded to create tentative category names. In this coding data was coded into two broad categories either as a barrier or a facilitator. These categories were further delineated the same as in the literature review as personal, social, academic or institutional.

Barriers were coded as personal if an issue not specifically academic or social, but were negatively affecting lives. They were coded as social if the main theme of a student veteran’s statement had to do with negative interactions with others. If the main focus of a statement was an issue that was impeded a student veteran’s completing his coursework, barriers were coded as academic. Finally, if affecting a student veteran’s academics was caused by something other than the student, the barrier was categorized as institutional.
Facilitators were coded in a similar manner. Facilitators were coded as personal if it not specifically academic or social but was positively affecting lives. When the main theme of a student veteran’s statement had to do with positive interactions with others, the facilitators were coded as social. A facilitator was categorized as academic if the main focus of a statement was an attribute or skill that was useful in a student veteran’s completing his coursework. Finally, they were categorized as institutional if student veterans in this study emphasized the usefulness of a service provided by the institution. Examples of these two coding steps are shown on the in tables 4 and 5.
### Table 4

**Coding Institutional Barriers**

<table>
<thead>
<tr>
<th>Focused Coding</th>
<th>In Vivo Coding</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teach yourself</td>
<td>Yeah, and that sucks sometimes, but it’s not necessarily wrong it’s just what it is you gotta teach yourself stuff. But that can be really frustrating sometimes too.</td>
<td></td>
</tr>
<tr>
<td>Learned in high school</td>
<td>But everything, you keep hearing a lot of, well you learned that in high school. Well high school was quite a long time ago for me and I don’t remember learning this if I ever did learn this at all.</td>
<td></td>
</tr>
<tr>
<td>Correcting professors mistakes</td>
<td>And so I spent more than my fair share of time last semester proof reading for a specific professor …..I spent a lot of time correcting his mistakes for him to pretend he never actually made them after I’d point them out.</td>
<td></td>
</tr>
<tr>
<td>Emphasis on learning</td>
<td>But as far as knowledge basis I wish there was more emphasis on actually learning things as opposed to oh you have to take English 102 because apparently your English class from Villanova University was not sufficient.</td>
<td></td>
</tr>
</tbody>
</table>

*Note. This table provides an example of how data was coded for institutional barriers.*
Table 5

**Coding Academic Facilitators**

<table>
<thead>
<tr>
<th>Focused Coding</th>
<th>In Vivo Code</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention to detail</td>
<td></td>
<td>So that was my first real taste of leadership in the Army and I learned a lot about attention to detail don’t overlook any little thing.</td>
</tr>
<tr>
<td>Don’t procrastinate</td>
<td></td>
<td>Because of the military I have always been on top of my homework and my studies and like I get a homework and I start on it immediately. I guess a positive thing is I have never really procrastinated through college which has helped tremendously which has given me a high GPA and everything.</td>
</tr>
<tr>
<td>Time management</td>
<td></td>
<td>And that’s kind of where I learned, I started getting time management, I started learning time management better.</td>
</tr>
<tr>
<td>Self-discipline</td>
<td></td>
<td>Like it’s go to every class, turn in every homework, don’t ever skip one because you skip one you’ll rationalize skipping more. So, self-discipline I guess.</td>
</tr>
</tbody>
</table>

*Note.* This table shows an example of how data was coded for academic facilitators.
Discourse Analysis. A third coding was based upon a) whether or not it appeared the student veterans were aware that they had gained competencies from their military service that they could use in college, and b) identities expressed by student veterans. Discourse analysis was the tool used for this coding. First, examined if the student veteran was aware of how to use competencies developed through the military in their academics. I looked at comments that participants made that credited something that they had learned in the military as either being helpful or harmful to their academic success. An example of this coding is shown in table 6.

Table 6

Coding for Awareness of Skills Developed in the Military

<table>
<thead>
<tr>
<th>More Aware or Less Aware of Skills Developed in Military Could be Useful in Academics</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>More Aware</td>
<td>I don’t know if college is really preparing me for the workforce so much as the Navy did. If I had come … to college straight out of high school I don’t think I would have been as successful.</td>
</tr>
<tr>
<td>Less Aware</td>
<td>But my parents raised me to be disciplined. I think it’s part of my personality. My brother is disciplined too but he’s a little more relaxed about things. But my family definitely raised me to be disciplined. I was interestingly enough I was home schooled for most of my life. My parents would teach me how to be disciplined, self-disciplined know what grades you need.</td>
</tr>
</tbody>
</table>

Note. This table provides an example of data was coded for more or less aware.

Gee further distinguished four different ways to view identities that a person may display. These identities are a nature identity, an institution identity, a discourse identity, and an affinity identity (Gee, 2001). How these identities are developed are shown in table 7.
Table 7

**Four Ways to View Identity**

<table>
<thead>
<tr>
<th>Process</th>
<th>Power</th>
<th>Source of power</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nature-identity: a state</td>
<td>developed from</td>
<td>forces</td>
</tr>
<tr>
<td>2. Institution-identity: a position</td>
<td>authorized by</td>
<td>authorities</td>
</tr>
<tr>
<td>3. Discourse-identity: an individual trait</td>
<td>recognized in</td>
<td>the discourse/dialog</td>
</tr>
<tr>
<td>4. Affinity-identity: experiences</td>
<td>shared in</td>
<td>the practice</td>
</tr>
</tbody>
</table>


As an example a nature identity in a student veteran would be the love of learning. An institutional identity would be a student veteran in the National Guard being an NCO. A discourse identity would be a student veteran being outgoing. Finally, an affinity identity would be a student veteran who states that he is very proud of his service. How student veterans show these identities are discussed in the four narrative inquiry stories. These provide a sense of the various ways student veterans viewed themselves and their experiences as veteran engineering students.

**Ecological Systems Theory.** An additional analysis was conducted using portions of Ecological Systems Theory. Specifically the interpretation of this theory by Neal and Neal (2013) who argue that rather than nested, the systems in Ecological Systems Theory should be networked. They shift the emphasis from places to “…the social relationships surrounding a
focal individual, and where systems at different levels relate to one another in an overlapping but non-nested way” (Neal & Neal, 2013, p. 723).

Two types of transitions that serve as a catalyst for developmental change in an individual make the ecological systems theory especially applicable (Bronfenbrenner, 1986). The first transition is a normative change, for example, entry into school. The second transition is a nonnormative change, for example, death of a family member. The student veterans clearly underwent a normative change when they left the military and began college. I used this model to determine for the student veterans “…points of intervention that lie beyond the individual” (Neal & Neal, 2013, p. 723).

Microsystems were developed based upon student comments and my experience as an academic advisor in the Statler College. As an example for the student veteran in the college environment there are interactions with professors, advisors, peers and the veterans center. For example one student recounted the first time we met that shows an example of the interaction of a veteran and his advisor. Many students commented on interactions with their peers both positive and negative. I know as a student veteran myself that contact with the Veterans Center must occur at least once a semester. This is depicted graphically below in figure 6.

**Figure 6**

*The College Microsystem*
Conclusion

In this chapter the following sections were discussed: theoretical perspective, methodology, participants, sampling procedures, data collection, and data analysis. In the methodology section narrative inquiry was addressed. In the participants section, an overview of both student veterans and professors was provided. The sampling procedures contained a description of how student veterans and professors were selected for this study. In the data collection section, the two means of data collection, graphic elicitation and semi-structured reflexive interview were described. Additionally, an explanation of why each question in the interview was used was provided. In the data analysis section coding, discourse analysis, and Ecological Systems Theory were discussed. These analyses were used to address the two research questions: What are the experiences of veteran engineering students? How has military service impacted those experiences? This led to the determination of barriers and facilitators that these student veterans faced. Additionally, a determination was made on whether the student veteran was more or less aware of how to apply competencies they had gained through their military service to their academics. Ecological systems that student veterans interacted with were also determined. Finally, four stories are told of student veterans to show how all of these lenses fit together in their personal narrative. These results are presented in chapter 4.
Chapter Four Results

This study investigated the experiences of student veterans in engineering majors in the Statler College of Engineering and Mineral Resources at West Virginia University. I wanted to understand their experiences as student veteran engineering students. As part of this I examined the barriers and facilitators they experienced in their academics. I also examined how aware they were of the competencies developed in their military service and how to use them in their academics. Finally, I looked at how they experience the various ecological systems they are part of. I will present the findings in four sections. In the first, I present results of comparing student veteran and professor participants’ responses regarding facilitators and barriers to findings in the research literature. I categorized the student veteran’s similarities to the literature review into either facilitators or barriers, and I further divided into the following facilitators and barriers into sub-categories. For the facilitators and barriers categories the sub categories are: social, academic, personal, and institutional. For the professors’ comparison to literature, the categories were the same; however, there were fewer sub-categories. From the professors perspective in the facilitators category there are the following sub-categories: social, academic, and personal. The only barriers that the professors identified were under the social sub-category. Next, I share results of discourse analysis examining the extent student veterans are aware of the skills they developed during their military service and use them to be successful in their academics or student veterans who were not aware that they had these skills and/or how to use them effectively. Next, I identify three sets of ecological systems that fit the student veterans in this study. In the final section I tell four stories of student veterans’ experiences and how they relate to their pursuit of an engineering degree, including the facilitators and barriers they faced, the
ecological systems they experienced, their awareness of their competencies and the identities they expressed, accepted and/or embraced.

**Comparison to Literature**

In this section I will compare the results of my study to what was found in the literature. I divided what was found in the literature to facilitators and barriers. Similar to the literature review, the barriers and facilitators were further categorized as personal, social, academic, and institutional. In the first section I will share findings from the analysis of student veterans’ interviews, and the second section will share findings from the analysis of professors’ interviews about their experiences with student veterans.

**Student Veterans’ Perspective**

**Personal Barriers.** One barrier that the participants discussed was finding time for interests other than academics. As an example one of the barriers student veteran Juliet had was with finding a balance between school and other interests:

> So I had this internal struggle of well I need to do good, I need to do well but I don’t want to be here till two in the morning studying. I want to have at least a semi regular life stuff like that.

Student veterans had different approaches to finding this balance. Some ignored it altogether, others focused on course work at the expense of other interests. Still others managed to find time for other interests, such as hiking, skiing, and running.

The literature was full of instances of student veterans having PTSD or TBI. Those barriers were not a focus of this study. I did, however, have one student veteran who told me he
was having mental health barriers and was getting help at a local Veterans Affairs Hospital. Loss of purpose was mentioned in the literature as a personal barrier. However, it was not present in this study as all of the students seemed focused on their academics. Hiding veteran status was another issue that came out in the literature. Since all of the participants were using the GI Bill that was not present in this study. The issue of self-direction was not present in this study either. Self direction, in the literature, was mentioned as problems some student veterans had going from an environment where everything was planned for them in the military to a college environment where the only scheduled time was when they had classes.

**Personal Facilitators.** In this category facilitators that were present in this study included dealing with stress, optimism, the desire to succeed, preparation for the future, finishing college and doing whatever it takes. Several student veterans commented on how stressful engineering coursework was, even comparing it to combat tours. According to student veteran Foxtrot, after completing an especially difficult assignment he told his peers, “I told them you realize what we just did was worse than two of my combat deployments.” What they relied on in these stressful situations were skills they had learned through their military service to manage stress. Student veterans related that many times their initial training, boot camp, was where they first learned how to deal with stress. Student veteran Foxtrot also related how he learned to deal with stress early in his military career, “Obviously I learned how to deal with extreme stress. They do a pretty good job of that in our boot camp.” Student veterans often conveyed optimism that things will turn out alright. Student veteran Juliet related that was one of the lessons he learned in the Navy:

One thing I did learn through my time in the Navy is the world is going to keep turning. Like none of this is permanent. Like it will, it will work itself out. Like it does, it is easy
to get stressed out about a lot of things but there is always a solution to it and you can figure it out. Worst case scenario tomorrow might suck a little bit but it’ll be okay.

Discussions of stress were prevalent in this study. This is partially because I questioned students about how they dealt with stress. However, the ability to manage stress was brought up by six of the students in their timeline prior to being asked about it in the interview.

The desire to succeed was something that student veteran Golf took away from the Navy. He felt that gave him an advantage that he would not have had if he had gone straight into college from high school:

But I always wanted to be better, to do better, to get more qualifications, to learn about my job so I wasn’t that useless guy. Like I can contribute as much as possible, as soon as possible. And I think that, I think the Navy gave me an outlet for that quickly, whereas if I would have went straight to college I wouldn’t have had the ability to figure that out for a year or two and that would have been very detrimental to my future debt outlook.

Student veterans Alpha, Foxtrot, and Tango also related that the military had instilled a desire to succeed in them.

Several students mentioned that they felt more prepared for joining the workforce because of their experiences in the military. As an example, the Navy taught student veteran Juliet a lot about being prepared for his future, more than he felt would have been possible if he had gone straight to college:

I don’t know if college is really preparing me for the workforce so much as the Navy did. If I had come in, if I had come to high school, or come to college straight out of high school I don’t think I would have been as successful.
Similarly, several of the student who had gone to college prior to the military and done poorly felt the military experience helped prepare them to be successful the second time. Additionally, for these second time students the desire to finish their college degree was very important to them. Student veteran Delta explained that well:

Especially where I grew up, where I grew up in Northern Virginia where everyone goes to college. All my friends got their degrees so I think in kind of a sense it was almost like, it was something I didn’t finish and I felt like I had to go back and finish.

Several student veterans expressed knowing they had to do whatever it takes to get the job done. Student veteran Charlie said:

Whereas being in the Army I was like man I only have eight hours to do this, I’m on it till it’s getting done because if not it’s not getting done. And I am not taking a loss on this. So you just force yourself to dig in and get it done.

This is an important concept for engineering students who are often in team competitions. For example, the Concrete Canoe Competition, Design Build Fly Competition, and the NASA Robotics Mining Competition all have hard deadlines to meet.

In the literature, increased maturity, life experiences, and mission focus were identified as personal facilitators. However, when interviewing the students in this study these facilitators did not come out explicitly. Doing what it takes to get the job done and desire to succeed could certainly fit into the category of mission focus. Dealing with stress and feeling optimism are certainly life experiences; however, in the literature the emphasis was on sharing these facilitators with other non-veteran students and this was not mentioned in this study. Maturity was not one of the facilitators that student veterans mentioned specifically; however, some of
their statements show their level of maturity. As an example, student veteran Alpha talked about his time in the National Guard, “I’m now a full time trainer and supervisor and mentor….” I believe that being a supervisor and mentor show a level of maturity that many non-veteran students would not possess. Preparing for the future and finishing college also were not mentioned in the literature I reviewed. Dealing with stress was not mentioned in the literature; however, it received a lot of emphasis from the student veterans in this study.

Social Barriers. Working with peers was an attribute for some and a barrier for others. The main issue student veterans expressed was their peers not being as dedicated to their studies as the student veterans. As student veteran Lima explained:

I typically take on the brunt of the work because a lot of kids don’t have the drive or the focus or the organization to like get things done you know in a timely manner. Most college kids I’ve had the experience of working with are you know I’ll wait till the night before to get a project done. So I’m not like that, I’m completely the opposite as soon as the project is assigned I start working on it and in my head I’m like the faster I get this done the faster I won’t have to stress about it being done you know what I mean.

Part of this frustration may come from their experiences in the military where teammates rely on each other to pull their weight in order to accomplish the mission. The literature also mentioned student veterans being angry at non-veteran students’ lack of discipline.

Similar to non-veteran students not being dedicated to their studies, student veteran Charlie felt that sometimes the student veteran spent too much effort on non-veteran students, trying to change their behavior:
And I noticed through the people I met that there were veterans who were having a lot of trouble with it. Were people who approached it as if it was the service. They tried to be just as rigid and they would get upset with other people [who] aren’t doing what they are supposed to. If I could find the words, be an Army of one. Don’t worry about anyone else, not your responsibility.

When student veteran Charlie says “be an Army of one” I interpret that to mean that he feels a student veteran’s first obligation is to make sure they are successful. This is slightly contrary to my experience in the military where looking out for your teammates was often prioritized over your own needs.

**Social Facilitators.** Themes in this category included working in teams, leading teams, communicating, motivation, sharing life experiences and support networks. The ability to work in teams was mentioned several times. According to student veteran Charlie:

> But really Afghanistan is probably where the clarity moment where you really see what you can do as a group of people when everybody just pulls in the same direction. How much you can get done, what you can accomplish.

Student veteran Charlie, in the example above, is referring to combat situations. However, this sentiment was not reserved for combat situations. Several student veterans made similar comments about their ability to work effectively in teams in non-combat situations. Because many of the projects that engineering students complete are team projects being able to work well in teams is an important skill.

Leadership was mentioned by several of the student veterans. Student veteran Lima reflected on one of the leadership lessons he had learned:
But also like at the end of the day they are still my boys but it doesn’t always work out like that. You kinda have to settle on the fact that it’s one or the other, you know what I mean you’re the leader, you gotta be the leader.

Many of them expressed having learned important lessons from the leaders they had, both from what they felt were good leaders and poor leaders.

Being able to communicate clearly is an important skill in the military. The ability to give clear instructions on what needs to be accomplished to others was mentioned by several students. Student veteran Charlie felt that this was a skill that translated well to college:

But it wasn’t till engineering school there that you really meet people who are way different from you. And I used a lot of stuff that I had learned in the service to better communicate with people, see other people’s point of views.

Clear communications is also an important leadership skill which helps explain why many of the student veterans were effective team leaders in their engineering projects.

Motivation was mentioned as making a huge difference in how units performed in the military. Sharing their life experiences with other students was something that several student veterans found satisfying. Using support networks that often consisted of people they had met in the military was a valuable resource for many student veterans.

In the literature review there were two main themes: experience with diversity and ability to work in teams. The ability to work in teams and lead teams was mentioned frequently in this study. Student veteran Charlie hints at diversity in his statement above; however, diversity was not mentioned explicitly in this any of the interviews.
**Academic Barriers.** One of the major complaints of student veteran were professors assuming they had learned something in high school which many of them had not. This issue was not apparent in the literature. Student veteran Golf stated it this way:

And [be]cause the teacher kept saying you should have learned this in high school, you should have learned this in high school. Like this is just what you’ve seen a hundred times and I’m sitting there in class like I have not seen this once in my life dude. Like I never went to physics in high school, I went to a trade school for electricity. And even if I had seen it in high school it would have been 8 years ago.

Both not having learned something in high school and the length of time the student had been out of high school are mentioned above. The median number of years student veterans in this study had spent in the service was five years, which is a long time to retain material a person learned in high school especially if they had not used that information in five years.

Student veteran Foxtrot was frustrated with some professors’ inability to teach the material well. He felt that because some were more interested in research than teaching, he had to do a lot on his own: “Yeah, and that sucks sometimes, but it’s not necessarily wrong it’s just what it is you gotta teach yourself stuff. But that can be really frustrating sometimes too.”

Another student veteran had a more specific complaint about teaching:

And so I spent more than my fair share of time last semester proof reading for a specific professor who, I understand he’s an expert in the industry and he’s brilliant and he definitely had a well-developed resume but I spent a lot of time correcting his mistakes for him to pretend he never actually made them after I’d point them out.
This shows the frustration that this student veteran had with an industry expert being a poor teacher. Additionally, his frustration with not being acknowledged for putting in the time to correct the professors errors is evident.

Not having sufficient time to work on projects was another complaint. Student veteran Golf expressed frustration at not being able to work on online assignments when he had little else to do:

Or opened up homework or whatever it is and it’s like why can’t you just open these things up two weeks in advance so we know what’s coming and we can work on it and then we’ll get it done by the due date. But instead they’re like you have four days to finish this, I could have been doing this last week when I was doing nothing.

These types of complaints are certainly not limited to student veterans as I heard many of the same type complaints from non-veteran students during my time as an academic advisor. These issues may be especially frustrating for student veterans who are more mature and focused on completing their degrees.

**Academic Facilitators.** Themes in this category included study skills, attention to detail, time management, use of planner, engineering skills. Student veteran Oscar explained that he learned how to study in his advanced training to be an electronics technician:

That was a hard wall once I hit A School I quickly had to learn how to dedicate some hours to study. That’s where the main bulk of my study strategies developed were through A School. Especially since at least the material and quantity and time period that
we had were so polarizing I just need to have some sort of effective study plan if I was just gonna make it through my schooling.

Several of the student who had more technical jobs in the military like student veteran Oscar mentioned that they really did not have to study in high school.

As an example of learning attention to detail, student veteran Tango stated “So that was my first real taste of leadership in the Army and I learned a lot about attention to detail don’t overlook any little thing.” Not procrastinating was something that student veteran Alpha learned from his time in the service:

…because of the military I have always been on top of my homework and my studies and like I get a homework and I start on it immediately. I guess a positive thing is I have never really procrastinated through college which has helped tremendously which has given me a high GPA and everything.

Not procrastinating ties in with time management skills that were also highlighted by several student veterans. As student veteran Juliet stated, accessions training in the Navy helped him learn time management: “And that’s kind of where I learned, I started getting time management, I started learning time management better.” Many of the student veterans emphasized writing their assignments in a planner or calendar as a means of managing their time. Student veteran Foxtrot stated:

Somebody gave me a calendar the first week of college, one of those little WVU calendar books. I made a point of going to get one every year after that. I just write all my homework assignments and test dates and all that stuff in there and check it off when it’s done.
This method helps explain comments made by several professors that the student veterans very rarely missed a due date.

One of the lessons student veteran Echo felt he learned from his deployments was self-discipline and he applied that to his academics in the following way “Like it’s go to every class, turn in every homework, don’t ever skip one because you skip one you’ll rationalize skipping more. So, self-discipline I guess.” One of the skills that was highlighted several times in this study that did not come out in the literature was that many of these student veterans enjoyed teaching their peers. As student veteran Bravo related, this skill came from his time in the Army, “…one thing I really liked about the Army was how as soon as you learned something you had to start teaching it. That makes you better at the thing.”

Many of the student veterans had gone to school prior to joining the service. They had done better in school after serving in the military. Student veteran Tango attributed his success to the Army, “But my GPA leaving Villanova was 2.78 my GPA for WVU exclusively is 3.8. So before the Army versus after the Army I’d say there was a lot involved in that.” Engineering skills were mentioned by two student veterans who were aircraft mechanics, one in the Air Force and one in the Navy. Student veteran Golf, who was in the Navy, mentioned engineering skills this way:

Like when I wanted to learn how an aircraft worked I would take, they have a manual that basically like explains what the engine does. And this is something that not a lot of people knew how to do and why I had so many qualifications [be]cause I could sit down with a pilot and explain to them in common terms what was wrong with an aircraft.
As mentioned before, the technical nature of being an aircraft mechanic is one reason student veteran Golf had improved study skills as a result of his time in the military.

Mentioned more often than possessing engineering skills was someone recommending that the person go back to college. Several student veterans said that they had talked to supervisors who recommended they go back to school. Others had talked to engineers who were working on the projects they were working on. Several others had started college and left to join the military and, because of their experiences in the military, wanted to finish their engineering degrees.

The literature mentioned time management, engineering skills and self-discipline as academic facilitators. All of these facilitators were mentioned in this study. Skills that were not mentioned in the literature but came out in this study were attention to detail, not procrastinating, doing better the second time in college and teaching peers. Attention to detail, not procrastinating, and doing better the second time in college were skills that could be inferred from other skills in mentioned in the literature. Teaching others was a skill that had not been previously mentioned in the literature. Not procrastinating could be categorized as a time management skill; however, it was mentioned specifically several times so I thought it deserved a separate categorization.

**Institutional Barriers.** These barriers directly relate to the ecological systems that students interact with. As was evident in the literature, being in the National Guard and being a full time college student veteran is challenging. Student veteran Alpha, who in the past had suffered lower grades because of missing exams, stated it this way, “I don’t know if it is college specific but being in the Guard and being in college, is kind of a nightmare. It’s always pulling you away, it’s always at the most inconvenient times.”
The literature made mention of barriers with student veterans receiving credit for their military service. Transferring military credit was not mentioned in this study, possibly because there is not much military training that would apply to an engineering degree. In my position in MAE I was responsible for having credit from prior schools and military training evaluated to see if the credit would transfer to WVU. As an example the training for a nuclear operator in the Navy includes training on thermodynamics. While it is very valuable training, it is not calculus based and therefore not equivalent to thermodynamics taught in MAE. What was discussed by the participants in this study was not being able to transfer credit from another university. Student veteran Tango discussed this: “But as far as knowledge basis I wish there was more emphasis on actually learning things as opposed to oh you have to take English 102 because apparently your English class from Villanova University was not sufficient.” For student veterans who are focused on completing their degree not getting credit for something they have already completed can be very frustrating.

Student veterans described financial barriers related to paying for college and supporting their families. Student veteran Lima was one of those student veterans who had to have additional income to support his family, and it caused barriers with his schooling. As he stated, “But I think the fact that I was married and I still had to maintain the full time job to support my family and stuff, you know what I mean that adds a lot to it.” Although the GI Bill pays a stipend for those with a family, it is not enough to live on.

In the literature there was mention of insensitive comments by faculty, staff and non-veteran students. The most prevalent seemed to be “did you kill anyone?” Fortunately there was no mention of these types of comments in the Statler College. One explanation for this is that I know as a member of the WVU Veterans Advisory Committee the university is consistently
rated as a military friendly school. The literature also mentioned barriers of withdrawal and reenrollment due to deployment. This issue was not mentioned by any of the student veterans in this study although two of the student veterans were deployed while in college. The issue of missing class because of drill in the National Guard, which is a similar issue, was mentioned as was shown above.

**Institutional Facilitators.** These are programs or facilities that WVU offers to its veterans to assist them in their degree completions. Several similar programs appear in the model programs section of the literature review. A student veterans’ group is one support system that student veteran Juliet found useful:

> And then when I first got out, the positive I guess, we have a student veteran organization. I didn’t really know anybody around here. I met a bunch of people through there so kind of helped with the transition I guess. Was my first positive experience.

There seemed to be a high interest in the veteran’s group as it was mentioned by five of the student veterans in this study and one of the student veterans was the president of the group.

When asked about resources many of the veterans mentioned the library. According to student veteran Bravo, “I’ve used the library a lot. Just as a study space. And I never did that the first time. But I’ve used that quite a lot this time.”

The literature did highlight the importance of a student veterans group. Also highlighted was a place for veterans to meet separately from other students. Both of these were mentioned in this study. The library at WVU has a separate space for student veterans to study, and many students in this study found that very useful. The use of a planner to help manage time was not
highlighted in the literature; however, the free planners that WVU hands out was mentioned several times as being useful.

**Professors’ Perspectives**

The following section will discuss findings from analysis of the interviews with professors in the Statler College. As with student veteran interviews, the section will be categorized as either facilitators or barriers. The only barrier mentioned by professors was a social barrier. The facilitators are further categorized as personal, social, and academic. No institutional facilitators were mentioned by professors.

**Personal Facilitators.** The student veterans emphasized doing whatever it takes to complete their assignments, and the professors mentioned this drive also. Professor Kilo noted that student veterans had a mission-type focus on their work, “And what we find is yes they are more conscientious. They are more goal driven, they don’t miss assignments by in large.” Another professor, professor November, similarly commented on how one of his student veterans was impacted by his time in the Army, “I mean he was quintessentially military right. He was dutiful, up at dawn doing things, … I mean if you asked Student A to do something it would be done.” Professor November seems to equate Student A’s focus on his studies and school responsibilities to the focus he needed in the military for completing the mission.

Professor India commented on how employable student veterans were after graduation: “I tell them that there is a crying need out there for maturity and judgement and experience which I can’t supply them with the averaged 22 year old.” Only one of the student veterans that I interviewed was a recent graduate, and he was employed right out of college. Another student veteran was currently working in an engineering position part time. Only two other student
veterans seemed to understand that their military background made them very employable right out of college by mentioning jobs they desired after graduation directly related to the military.

Student veterans have a variety of experiences that their non-veteran students do not. Professor Mike felt that student veterans sharing these experiences helped the class overall. He noted, “They are the adults in the room. And the self-discipline and just sharing their personal experiences can really help out in discussions in class or help out on project work, that type of thing.” While statements by student veterans hinted at their maturity, the professors mentioned it explicitly. In this instance maturity is mentioned as it relates to improving the classroom environment similar to how life experience is mentioned above. As professor India stated, “And they just bring the maturity to the class that you don’t normally see with students that come right out of high school into college. Even ones that are juniors and seniors.”

The literature mentioned increased maturity, life experience and mission focus as personal facilitators. Although not specifically mentioning mission focus both the statement above by professor Kilo and professor November could be classified as demonstrating mission focus. An indication of a mission focus is completing tasks on time despite any obstacles and both their statements point to that focus in the students they describe. Increased maturity and life experience are mentioned explicitly by the professors. Increased employability, mentioned in this study, was not mentioned explicitly in the literature I reviewed.

**Social Barriers.** Dealing with non-veteran peers was mentioned in both the literature and by student veterans themselves. It came up again while interviewing professors. Professor Mike commented that it took them some time to get used to being around the non-veteran younger students, “Again it’s a matter of just getting used to being around younger people. And tolerating their silliness, you know like waiting until the last minute to get their assignments done and stuff
like that.” Additionally, he felt that they were very valuable in class; however, they sometimes needed encouragement to see that. In the following statement, professor Mike emphasized their leadership, an attribute, and feeling out of place, a barrier:

You know because they are generally taking freshman or early sophomore classes. So they are much more disciplined and frequently are group leaders and I have found that they feel like they are really out of place and I try to reach out to them as a teacher telling them that we really value them in class because they set the tone for the rest of the class.

The literature mentions student veterans being angry with non-veteran student’s lack of discipline which fits with the professors’ statements. Not mentioned by the professors or by the students were feeling uncomfortable in crowds.

**Social Facilitators.** The ability to work in teams was highlighted by several professors. As professor India stated, in his experience student veterans in his classes worked well in teams:

And so my experience in general has been that they tend to elevate the performance of the entire class. They know what they want, they know why they are there, they know how to work. They know how to work with teams and other people.

This supports the ability to work in teams that was mention by several of the student veterans.

Several of the students mentioned attention to detail in their interviews. Although the professors did not mention attention to detail specifically, they did mention students being thorough. As an example, professor Mike felt that non-veteran students liked working with student veterans because of their thoroughness:
Very good around things like, let’s cut out the BS and get on with the job, we’ve got an obligation to meet this. They are very good at going through the assignment checklist and making sure that everything is done that needs to be done. I mean there is no sloppiness about that at all. And I think because of that, I think the other student really like having them on a team.

The literature mentioned diversity and teamwork as social facilitators for student veterans. Diversity was not mentioned by the professors; however, teamwork was mentioned several times. All of the professors except one made a point of mentioning that the student veterans they had experience with were very valuable members of the teams in which they worked.

**Academic Facilitators.** Several students mentioned not being afraid to ask questions in class and this was also highlighted by the professors. As an example professor Sierra noted that student veterans typically were more active participants in his class:

Yeah they are very, generally they are very active. As a percentage they are much more active than the traditional students. You probably know the numbers better than I do but you know in a given class of 100 there are maybe one or two. And they are generally one of the few that actually asks questions and get involved.

This is supported by student Oscar’s statement that he was not afraid to ask any question in class.

Many of the students veterans had gone to college prior to their military service and done significantly better after their military service. Professor November highlighted this saying, “He went to Wesleyan and he got a 0.06 GPA his first semester. He had clearly gotten some academic religion after his experience in the Navy.” Time management skills were mentioned by
numerous students and the professors noted this also. Professor India, commenting on his experience with a program for student veterans that was administered while they were on active duty said, “And Dave I only remember one student veteran that was not able to complete that and that was a very demanding program time wise. Took a lot of management on their part to be able to do that.”

The students who were serving in the National Guard tended to focus on the barriers that arose as a result of serving while attending college. From a positive perspective, professor November highlighted how time in the National Guard had helped one of his student veterans, “He was in the National Guard, and so he has some, some hands on that really helped with his understanding of application and so on.” Another positive aspect that stood out among some of the student veterans who were in the National Guard was their self-discipline. As professor Mike pointed out “Now the National Guard student veterans, I’d like to talk about that because they are typically about the same age as their classmates. …They are much more self-disciplined and they use their time much more wisely.”

The literature mentions time management, self-discipline and engineering skills as academic facilitators student veterans possess. Time management came out clearly in interviewing the professors. Self-discipline was also mentioned by the professors. The professors focused on the positive aspects of student veteran’s service in the National Guard, while the student veterans focused more on the negative aspects. As shown above, both time management and engineering skills were attributed to service in the National Guard by the professors.

**Summary**
In this section student veterans’ and professors’ perspectives were discussed. These were further classified as either barriers or facilitators. The barriers and facilitators were further separated into personal, social, academic, and institutional. The professors only mentioned barriers in the social category.

Personal barriers reported by the students were work life balance. Personal facilitators mentioned by student veterans included the ability to deal with stress, optimism, the desired to succeed, preparation for the future, finishing college, and doing whatever it takes to succeed. The professors identified being goal driven, and more employable after graduation, as well as having more life experience as personal facilitators. In the literature, increased maturity, life experiences, and mission focus were identified as personal facilitators. While these were not present in this study, all three could be inferred from the student veteran comments in this study.

Social barriers included working with peers and not having support networks. The professors noted working with peers as a social barrier. Social barriers in the literature included student veterans being uncomfortable in crowds. Social facilitators included working in teams, leading teams, communicating, motivation, sharing life experiences, and support networks. The professors identified social facilitators as the ability to work in teams, and maturity. The literature only mentioned experience with diversity and the ability to work in teams.

Academic barriers included professors assuming they had learned and remembered a concept taught in high school. An additional academic barrier was what some student veterans felt was poor teaching. These barriers were not mentioned in the literature. Academic facilitators included working in teams, leading teams, communicating, motivation, sharing life experiences, and support networks. Professors discussed student veterans asking questions in class, time
management, and self-discipline as academic facilitators. Time management, engineering skills and self-discipline were the only facilitators mentioned in the literature.

Institutional barriers included being in the National Guard and transferring credits from other universities. The literature mentioned transferring credit from military training but not from other colleges. Another institutional barrier reported by student veterans were financial issues including being able to pay for college and in one case supporting a family. Financial barriers that student veterans reported facing were also discussed in the literature. Also present only in the literature was insensitive comments by faculty and staff. Institutions facilitators included a student veterans group, a separate study space in the library and the free planners WVU provides every semester. The literature highlighted both student veterans groups and a separate space for veterans.

**Awareness of Competencies Developed in the Military**

As I conducted the interviews, I noticed that there was a difference in how some of the student veterans articulated their approach to college and how it related to their military experience. Some student veterans clearly saw that they had developed competencies through their military service that they could apply to their academic pursuits. Other student veterans, while they may have developed competencies, either were not aware of those competencies or chose to apply them in a limited way to their academics. I distinguish between these two groups calling the first group more aware and the second group less aware. Students who were very clear when they mentioned a skill they had developed in the military and that they used that skill in college and were classified as more aware. Other students stated that the military had hindered their study habits and were classified as less aware.
As student veteran Delta recognized, the Army helped him develop resilience and, therefore, I categorized him as more aware:

I would say I ended up failing a lot so that would be maybe applicable to engineering parts is not always being successful and breezing through. But ended up always kind of having that resilience to recover and look for the next step. So I would say that was a major theme of my time in the Army.

This student recognized that the resilience developed through his Army service could be used as a tool for succeeding in engineering. Student veteran Alpha aware that his military background helping him stated:

...because of the military I have always been on top of my homework and my studies and like I get a homework and I start on it immediately. I guess a positive thing is I have never really procrastinated through college which has helped tremendously which has given me a high GPA and everything.

His emphasis on his military training is what led me to characterize him being aware of how to use this in his academics.

Student veterans who were aware expressed their ability to work in teams. As student veteran Foxtrot explained, “But, I probably have more experience working in teams of like four or five people than most student veterans. As demonstrated here students who were more aware emphasized their ability to work well in teams. Student veteran Charlie credits the military with helping him work with others. “But it wasn’t till engineering school there that you really meet people who are way different from you. And I used a lot of stuff that I had learned in the service to better communicate with people, see other people’s point of views….,” In contrast, student
veteran Lima found his military service experiences to be a hindrance in group work. “...having much more life experience it’s hard especially in engineering they want you to work in groups....” Lima, who was classified as less aware, did not recognize how to use the ability and experiences working with others gained in the military in his academics. Student veteran Echo who was classified as less aware felt that how to work with people outside the military might not transfer to college. “You may learn how to work with people in the military does not work outside the military.”

The approach to leadership between the more aware and less aware groups is also different. Those student veterans who are more aware tended to seek leadership positions while those less aware did not. As student veteran Alpha who was classified as aware, noted he is always the leader: “I don’t know if I like to have it but I do always end up as the leader, always the damn leader because things won’t get done in a timely manner otherwise.” This is contrasted with student veteran Echo who is less aware and doesn’t pursue a leadership role. “I found that the easiest for me is to do report writing.”

The student veterans who realized what they had learned in the military was useful in their academics often expressed a strong work ethic. Student veteran Delta reflected on, “…my time in Ranger Regiment. It’s a super high intensity environment where it is kind of that every single day you need to be improving yourself.” This attitude is opposed to student veteran Hotel, who was classified as less aware, said about homework, “The homework if it’s unnecessary busy work sometimes I’ll just skip it.”

There was also a difference expressed on whether they felt it was more beneficial to attend college before or after military service. Student veteran Foxtrot, who was more aware, felt the military had helped him be a better student. He said:
And in hind sight, I’m so glad I did it the way I did it, because it would have been a big waste of time and money. I would have got some ridiculous history degree or something like my brother. I’m very glad I did it this way, I’m not even the same person now that I was then.

From this statement it can be seen that he recognizes that his military service makes him a better student. This statement also reflects that the military influenced his career choice to be an engineering student versus a history major.

However, student veteran Bravo, who was less aware, stated he felt he should have gone to college first and then joined the military:

I’m glad I joined the Army. If I had it all to do over again, I’d do it again. But, I should have finished school the first time. I do wish, if I could talk to me in the past, finish it, then if you still want to go, go. Cause that would have helped me a lot in the Army and outside of the Army.

In this case the student feels that instead of the military helping in his academics his academics could have helped his military. This led to his classification as less aware.

Ecological Systems

Ecological Systems Theory provides a different way to look at human development by looking at a person’s interactions with their environment. In conducting interviews and reviewing transcriptions of those interviews and timelines it was noted that student veteran participants interacted with several ecological systems in different ways. This led to an examination of which systems each student interacted with and in what ways. Through this analysis, I created three different networked ecological systems that represent how participants
interacted with their environment: National Guard, Job, or College. For all of the student veterans, the college micro system was based on my knowledge as both an academic advisor and as a student veteran. This microsystem was present in all cases and consisted of professors, advisors, peers and staff at the veterans’ center.

For student veterans who are in the National Guard, a typical system is shown in figure 7. There are three microsystems: Guard, College, and Support Network. The guard microsystem was based upon statements from student veterans Alpha, Echo and Hotel. Alpha and Echo both had leadership roles in their units. Hotel did not have a leadership role; therefore, his portion of the Guard microsystem would only consist of co-workers and a supervisor. Additionally, there is one mesosystemic interaction between guard supervisor and the veteran’s center. For the student veteran there is one exosystem in the form of national security policy which could cause them to be deployed, interrupting their schoolwork. Student veteran Alpha explained that being in the Guard created challenges other student veterans would not face, “It’s always, I don’t know it’s hard to explain it’s hard to go back and forth between college life and homework and professors and then get in the military mode for a few days and then come back to college life.” This shows how he interacted with both the college and guard microsystems.
Figure 7

*National Guard Ecological System*

Note. This figure shows the interactions in the National Guard Ecological System.

For those student veterans who had a job in addition to school, the systems were very similar to those in the National Guard, with the job microsystem replacing the microsystem guard. Several students held jobs while in school and discussed the added stress of having to work. Student veteran Lima discussed this challenge. “But I think the fact that I was married and I still had to maintain the full time job to support my family and stuff, you know what I mean that adds a lot to it.” Student Veteran Juliet showed an interaction with both the Job microsystem and the College microsystem in this statement, “Then as far as like personal life the GI Bill was nice and I had a part time job for a while.” His reference to the GI Bill also shows his relationship with the Veterans’ Center where student veterans who are taking classes have to interact every semester to verify their enrollment. In addition to verifying enrollment student veterans also have to confirm with the veterans center that they are taking classes that are
counted towards completing their degree. Additionally, in this system, the mesosystemic interaction between the supervisor and the veteran’s center is not present as it was in the Guard Ecological System.

**Figure 8**

*Job Ecological System*

*Note.* This figure shows the interactions in the Job Ecological System.

Finally for those veterans who are not in the National Guard or do not have a job the network contained two microsystems. All of the student veterans described having a support network although some relied on it more than others. Student veteran Oscar described an interaction with both a partner and family in the support network this way, “I mean my girlfriend is just, just my rock, so she helps me out with a lot of things. And my family still lives in Florida and even out of the country but I mean we are still in good communication.” Interestingly, in the
support network microsystem, several veterans related that they still regularly talked to friends they had made in the military as a means of support. Student veteran Foxtrot is an example of this, “As a matter of a fact I still talk to a lot of guys that I worked with there.”

**Figure 9**

*College Ecological System*

![Diagram of College Ecological System]

*Note.* This figure shows the interactions in the College Ecological System.

The students who are in the National Guard or have a job have more systems they interact with than someone who is just going to college. These additional systems could be a distractor to completing their coursework. There could also be advantages as some professors felt that being in the National Guard for example provided valuable hands on experience that other students did not have.

**Veteran Stories**

Out of the twelve veterans interviewed, I chose to tell four stories. These four stories cover all four of the branches of the military represented in this study. I chose to do this to
illustrate the similarities of experiences and competencies gained regardless of the branch of service. One story is from a student veteran who retired after 23 years of service. This story illustrates what competencies can be gained through a long term of service. Another student veteran is currently serving in the Air National Guard. His experience shows some of the challenges of being in the Air National Guard while attending college. Another student veteran was in an initial enlistment in the Army. Finally, is the story of the only minority student veteran.

Retired Student Veteran’s Story

This student veteran was a career Marine. His story illustrated how he has used many of the skills he developed in the military to be a successful engineering student veteran. Student veteran Foxtrot is a 45 year old white male. He spent 23 years in the Marine Corps and retired as a Chief Warrant Officer Three. He related that he wanted to join the military very early in life, probably around the third grade. He wanted to be a pilot like his uncle but because his eyesight started to deteriorate, that was not possible. He felt the next “coolest” thing was infantry which is what he decided on. He related that he took a lot of college prep classes in high school because his friends where in them. However, when his teachers started talking about taking the Scholastic Aptitude Test or American College Tests and friends were visiting prospective colleges, he was not interested. He expressed his feelings at the time as, “I’m like I’m not doing that dumb crap, why are you talking about it. I’m going to the military, you know.” He started his military career as an enlisted soldier at Paris Island, South Carolina. He learned about how to deal with “extreme stress” during basic training. He felt that boot camp was what he expected out of the Marine Corps but follow on training wasn’t. He comments that he learned what marketing was after boot camp:
That’s where I learned what marketing is. And I learned that all that stuff at Paris Island, that was, that was exactly what I expected it to be. But everything afterwards, that was where the real Marine Corps started to show itself. They don’t care about the marketing anymore. They’ve already got you.

He felt that he learned a lot about leadership in his first unit in the fleet, both good examples of leadership and poor examples: “I learned the difference between effective and ineffective leaders. Because I had, I had really effective and really ineffective at pretty much every level from my squad leaders all the way up to our battalion commanders.” While on his first tour he transitioned into a sniper platoon. He liked the sniper platoon because people left them alone because according to him, nobody knew what they did. From the sniper platoon he went to a light armored reconnaissance battalion. He was really impressed with that unit, essentially because he learned so much:

That was a really, really well put together unit. The training was excellent, everybody knew what they were doing. I learned, I learned how to put training together. I learned how maintenance is supposed to be done. I kind of started to see how the warfighting functions fit together. You know communications and logistics and all the stuff. I started to get exposed to all that stuff. Because they pushed knowledge about this stuff down to lower levels than the previous unit. The typical corporal there probably had kind of the understanding of how the military worked that would be comparable to a captain in other units.

His next unit was the Mountain Warfare Training Center where he was stationed for four years. He taught rock climbing and skiing there. He really enjoyed his time there, mainly because
everyone was so professional. Showing an example of the support microsystem, he still
maintains contact with the friends he made there:

> Everybody there had already been a sniper or in recon. So there is no, most units have
like that ten percent that aren’t physically fit or they are really too dumb to be in the
military but we got them anyway. There was none of that, every one of these guys had
come from some kind of a specialized more elite background and volunteered to come to
this place that sucks most of the year. And loves that it sucks, you know. So yeah, it was
fantastic, absolutely fantastic. As a matter of a fact I still talk to a lot of guys that I
worked with there. Of the six guys I worked with five of us went on to get commissions
of one type or another.

From the Mountain Warfare Training Center he was assigned to the First Battalion,
Second Marines with whom he spent two tours in Iraq. From that experience he felt he learned
how big an impact leaders can have on a unit. The first tour was bad because of the leadership
while the second was fantastic according to him. From there he was commissioned as a Warrant
Officer and spent a year at Quantico doing training. When his training was compete, he was
assigned to First Battalion, Seventh Marines in Twenty Nine Palms, California. There, with his
newly commissioned status, he was exposed to a different side of the Marine Corps that he felt
required a higher level of maturity than his previous jobs. His commissioned rank in the Marine
Corps is an example of an institution identity. This increase in maturity he attributed to having to
work professionally for the first time with people from many different specialties like supply and
personnel. Several of the professors mentioned the maturity of the student veterans they
interacted with. This story provides an example of how one student veteran gained this maturity.
His final tour of duty was with the Weapons and Field Training Battalion which teaches the
marksman and field training portion of basic training. In this position he exhibited the leadership attribute that was mentioned several times in this study. He really excelled in that position, having the best record since the Marine Corps started using that range in 1923. He attributes his success to putting the right people in the right jobs:

I developed a skill there to put people in a job that they will excel at and just kind of forget about their rank and what the TOE [Table of Organization and Equipment] says they are supposed to be. Where is this person going to be successful and make him look good which will make me look awesome and it worked out great.

He decided to get retire from the Marine Corps when he did not get promoted to Chief Warrant Officer Four. He says that he was initially hurt by not getting promoted but got over it fairly quickly and decided to use his GI Bill benefits to go to college. He became interested in engineering as a major in college by talking to some of the pilots in the Marine Corps. Many of them had engineering degrees. One of his first introductions to science, technology, engineering and mathematics (STEM) fields in the Marine Corps occurred in sniper school. He relates that the instructor gave a lecture on physics that at the time was very impressive but in hindsight was probably only the first 15 minutes of a college introductory physics course. He found that his math skills were lacking for getting accepted into an engineering program, but he was dedicated enough to fix the problem on his own:

I had no idea how, how unbelievably bad and insufficient my math skills were to get an engineering degree. So this guy turned me on to Kahn Academy. So the next day I did their, they got like an assessment of where you are at. I did that and my math skills were at the seventh grade level. This is six weeks before I am going to take the SATs to get
into engineering school. I had six weeks to teach myself algebra and trigonometry and get into CHEM 115. I got exactly the score I needed.

He chose mechanical engineering for two reasons. First, his last company commander had a mechanical engineering degree and encouraged him to consider that major. Secondly, it seemed like a good way to get into the design of guns. He has done well in college maintaining a B average, which was his goal as he explained below:

Grade wise I try to get at least a B you know. If I got a B in a class that was like these are really hard classes, really smart people. If you are doing above average you’re, the dumbest person in this building is border line genius.

He attributes some of his success in college to being able to deal with stress which he learned in the Marine Corps. Surprisingly, he felt that one of his classes was actually more stressful than some of two of his combat deployments. He also related that he felt possibly one of the reasons Marines who had an engineering degree did so well in stressful environments was due to the stress they had dealt with in getting their degree. He, like many other veterans, often ended up as the leader in team projects. This was in part because of his age but also due to his experience leading teams. The teams on engineering projects were small compared to what he managed in the Marine Corps. Using skills he developed in the Marine Corps to manage teams demonstrates that he is aware of the skills he developed in the military and knows how to use them to be successful in his academics. As he explains, “Yeah, I think the biggest team I was on was seven people. It’s nothing, I’ve been in charge of 85 people at one time.” He used a planner to keep track of his assignments and would check them off as he completed them. The use of a planner was brought out by several of the student veterans, and many of them attributed the use to techniques they had learned in the military to manage their time. One of his complaints was
that several of his professors were not good instructors and he had to teach himself a lot. Poor teaching was mentioned by other student veterans, whether just an issue in the Statler College or other engineering programs is unknown. However, with the posting of much material on line, it was evident to this student veteran that it was a problem elsewhere also. “I mean I could wish that every person teaching here knew how to teach but I’ve seen videos of people at MIT [Massachusetts Institute of Technology] and most of them don’t know how to teach either.”

Looking forward, he plans to get at least a master’s degree and possibly a Ph. D. in engineering. He seems to be encouraged to get a Ph. D. by several of the professors:

Because every time I get in an elevator or go to take a piss I get ambushed by somebody, so you are getting a Ph.D. huh? Dr. D was in the elevator with me the other day, oh you decided to get a Ph.D. I heard. No you didn’t, you’re trying to brainwash me. Just subtly slipped that in, he’s like don’t get too aggressive on your master’s you want to save some of this work for your dissertation.

Ultimately, he would like to work at one of the military proving grounds. As he expressed, “It would be cool to be in the military without being in the military again you know.”

Foxtrot’s story is one of a student veteran who realizes that he has developed some skills in the military that are useful in college, such as time management, leadership, and maturity which are all highlighted in the literature. One skill that did not appear in the literature was stress management; however, this skill was emphasized by this student veteran several times. He mentioned how important this is in an engineering program which many find very stressful. He also realized that some of the things that were acceptable in the military were not useful in college, “Like my potty mouth?” This student veteran was classified a being more aware of the
skills he learned in the military, saying he learned in the military, “pretty much everything that I didn’t learn in high school.”

Many different types of identities are shown through this story. From a very early age he showed an affinity identity with the military stating that he wanted to join military probably in the third grade. He emphasized this again in high school when he said he didn’t take the SAT or ACT because he knew he was going into the military. A nature identity is shown when he describes how professional everyone was at the Mountain Warfare Training Center. Another nature identity of being a good learner is demonstrated both when he describes being able to teach himself math and when he talks about getting at least a B in his classes. There are also several places he shows an institutional identity first as being a sniper and again as being commissioned as a warrant officer. When he discussed relating that a project was harder than some of his combat tours he shows two affinity identities, one as a combat veteran and another as an engineering student. When he states that it would be cool to be in the military again without being in the military he is again showing his veteran affinity. I feel that in this case the identity that is most prevalent in his story is a veteran affinity.

Since this student is not in the National Guard or has a second job, he fits in the ecological systems example that only contain college and a support group. The support group microsystem interaction is demonstrated when he relates still talking to people he worked with at the Mountain Warfare Training Center. He also shows interactions in the college microsystem with professors when he is talking to the professor in the elevator. Finally, he demonstrates another interaction in the college system when talking to his peers about how difficult their project was.
Guard is Hard

Student veteran Alpha’s story is of a student veteran who is currently in the Air National Guard. His story illustrated that some of the skills he developed through his service have been used to make him a successful engineering student veteran. The story also highlighted some of the challenges of being a student veteran while still a member of the service. He knew he wanted to be an aerospace engineer since high school, “Well I mean I guess I just kind of loved planes and rockets and all that stuff, and I just loved math and science, engineering was a natural course.” He learned in basic training many of the skills other student veterans have emphasized such as “Attention to detail, discipline, how to perform under high stress, customs and courtesies.” From basic training he went to MacDill Air Force Base in Tampa Florida. He was working on KC-135 aircraft, which are the refueling aircraft for the Air Force. He next experienced his first deployment to Al Udeid, Qatar. Working in the desert for 16 hour days was “exhausting.” However, he felt this made him an expert at his job. His second deployment was to Turkey and a much different experience. We begin to see some of his leadership skills emerge here:

It was still fairly high tempo. But it was my first time as like a leader and supervisor as an NCO [Non-Commissioned Officer]. And then I kind of learned the more big picture. I became responsible for all the maintainers and I was personally responsible for making sure the aircraft met their mission. So it was, it was still high tempo but it was, I don’t know, I don’t want to say less stressful but I was more confident in what I was doing.

After this deployment he moved to West Virginia and joined the Air National Guard where he currently works on C-130 aircraft. He explains his current role as, “I’m now a full time
trainer and supervisor and mentor and I learned the C130”, which is an example of his interaction with the guard microsystem.

He feels that his time in the service has helped him in his school work and is one of the student veterans classified as more aware of the skills he learned in the military that help him be successful in his academics. This is also an illustration of having engineering skills developed through military service which is consistent with the literature. He speaks of teaching his fellow student veterans about an airplane:

There are times where I will be the only one of my classmates that know what something is. Because something might seem trivial like an aileron and then no one has ever explained to these kids what an aileron is but I have been on the flight line calling out ailerons right left and everything. So I'll say it’s just a control surface on the tip of the wings. It helps sometimes when you can visualize things, I mean I’ve worked on it all.

This reflection also highlights teaching as one of the skills developed through military service that was revealed in this study but was not evident in the literature. Several other student veterans mentioned teaching other student veterans as a satisfying experience. In addition to helping others in class, he served as a tutor in math and engineering. This tutoring was paid for by the funds available from the veteran’s center and shows a microsystem interaction with the veteran’s center. This is different from the typical interaction students have with the veteran’s center in providing GI Bill processing support. Several of the other student veterans who participated in this study mention him as an excellent tutor. Another positive that he mentioned from his military service was learning not to procrastinate on assignments:
I think I have always, because of the military, I have always been on top of my homework and my studies and like I get a homework and I start on it immediately. I guess a positive thing is I have never really procrastinated through college which has helped tremendously which has given me a high GPA and everything.

Although his time on active duty and in the Air National Guard has had positive effects on his college studies, there have also been negative aspects, specifically having to leave school to go to work at the Guard. He related how one drill period had hurt his grade because he was not allowed to make up a quiz on which he was confident he would have done very well. In another instance he related the challenge of going back and forth from the military and college, saying:

A negative thing has been, I don’t know if it is college specific but being in the Guard and being in college, is kind of a nightmare. It’s always pulling you away, it’s always at the most inconvenient times. It’s always, I don’t know it’s hard to explain it’s hard to go back and forth between college life and homework and professors and then get in the military mode for a few days and then come back to college life.

He has been a very successful student veteran with a 3.6 GPA. He identified what he felt being successful in college meant:

To me being successful in college is not just getting through it but excelling at it. Getting good grades and retaining the information and ultimately becoming an expert at what you do. Which is also why I want to do grad school.

Work ethic was emphasized both by students and professors in this study. An example of this student veteran’s work ethic is how hard he worked in thermodynamics. It also demonstrates
that two mesosystems can be at work simultaneously because he was studying while during his annual training for the Guard:

I think probably the most successful I have felt in college is when I was taking thermodynamics and I was really nervous for it because I was still fresh back at school. And you know hadn’t been doing this that long and I didn’t really remember anything and I was really nervous for the second test so over spring break I practiced every problem in the damn book in the chapter, which was like 100 problems. I did them over and over and over again, all spring break. While on annual tour for the Air Force and I came back and I got a hundred on that test. That was my probably proudest moment.

Challenges working with other student veterans who are often less mature has been highlighted in the literature. The professors in their interviews also mentioned that this was sometimes an issue. He faced some of these same barriers:

Probably my biggest challenge I have faced though has been working with other students. Not that I don’t get along, I think I get along with other people pretty well. It’s just that a lot of times other students will procrastinate or kind of not care. Especially right now, I’m in my last semester and everyone has got senioritis, no one wants to work on anything, they’re just like eh, but everything is through projects in engineering, so at what point do you like either kick that member out or just do everything yourself? It can be a big, big struggle. Not everyone gets motivated easy.

He, like many other student veterans, often takes leadership roles on team projects. “I don’t know if I like to have it but I do always end up as the leader, always the damn leader because things won’t get done in a timely manner otherwise.” Time management has been
highlighted both in this study and in the literature. The use of a planner, while it would seem a simple tool, seemed prevalent in these student veterans as opposed to other student veterans I had interacted with in my role as an academic advisor. As he explains, this was an important tool for him, “I have a planner. I write in it religiously, especially when I get overwhelmed. Like at this point if I don’t write it in my planner it’s not going to happen because I’ll forget about it.”

In the future he hopes to earn his Ph.D. and get a position with either the National Aeronautics and Space Administration or the National Oceanic and Atmospheric Association. Similar to other student veterans’ experiences he has learned time management, work ethic, leadership and how to deal with stress through his military training. Also similar to other veterans he has had barriers dealing with less motivated peers. What he mentions that has not been discussed prior is his enjoyment from teaching his peers. While he did not experience the same institutional barriers mentioned in the literature of leaving college and then reenrolling due to a deployment, he still had institutional barriers with grades from missing quizzes. He was classified as one of the more aware students as he mentioned applying skills he learned from his military service directly to his academics. While being in the Guard is hard, it also had the advantages for this student of practical experience with engineering task, leadership opportunities and teaching opportunities.

In this story we see a nature identity when he states that he has always loved math and science. His identity as an NCO is an institutional identity. While his NCO status is an institutional identity he displays discourse identities when he talks about how he is also a mentor and trainer. A discourse identity also comes out when he discussed how confident he was as an NCO on his second deployment. We see the two affinity identities of being in the Guard and being as student work together as he describes how he can use his experience in the Guard to
teach other students. He has a nature identity of loving to teach. He mentions it here in the example talking about describing an aileron to other students. This also came out when several of the other student veterans described going to him for tutoring.

There were several mentions of how the ecological systems interacted in his case. In one instance he references how it is hard to go back and forth between the Guard and College microsystem from a leadership perspective. He also mentions how being in the Guard has caused him to miss a quiz and lowered his grade. In these two cases the two microsystems appear to be working against each other. In another case he mentions that his experience in the Guard microsystem has given him knowledge that is useful in the College microsystem. Therefore, in this second interaction between the two systems they seem to work together to make him a better student.

**Second Time Around**

This is the story student veteran Tango a 26 year old white male who spent five years in the Army. He spent two years in college in a mechanical engineering major prior to joining the Army. He actually talked with the Dean of the engineering department at his first school who he says encouraged him to join the military if that was what he really wanted to do. He spent longer than normal in training prior to his first unit because his training included Airborne School and Special Forces Assessment Training. He felt that he learned that not everyone who has a leadership role is necessarily a good leader. This is a theme which many of the student veterans echoed, indicating they learned as much about leadership from the poor leaders as they did from the good leaders. He felt that this knowledge also translated to college in some ways:
And then also throughout there not everyone who has a leadership role is not necessarily a leader. Just because they have the position and the title doesn’t really mean anything don’t always take their advice as gold or don’t take their actions as being acceptable. So that kind of, that translates well to the school sometimes, sometimes people stay in academia because they don’t want to go to the real world. And other people stay in academia because they genuinely really do enjoy it.

Because he was a good runner he was able to run with the battalion executive officer, who is second in charge in a battalion. Through that experience he learned about communications because he would hear things during a run and then would hear how it was different after it trickled down through the chain of command:

But from that I saw the huge difference in how communication is handled from the battalion level and then down by the time it got to the team level. And what got lost along the way and what didn’t get emphasized. And so from that I kind of learned you want to be sure that your communications are so lengthy that people are drawing their own conclusions all the time and adding their own little bits to be clear and concise and your objectives included versus leaving it up for interpretation. And then also with that sometimes since you are at the bottom end of the spectrum, you get information last you get the least amount of information.

After a training rotation at the Joint Readiness Training Center, he moved from an automatic rifleman to an assistant gunner, his first leadership position in which he was responsible for two other individuals. In this position he learned about attention to detail because anything he overlooked in what the soldiers he was responsible for caused him to be in trouble. He also learned the importance of accurate documentation of subordinates’ actions and of
providing goals for them. He was next promoted to a team leader where he was responsible for four soldiers. He felt that during this period he learned to take more initiative and to check to make sure what he wanted done was happening. This student veteran was categorized as more aware, and the following statement is a good example of his showing that he is aware of the skills he learned in the Army helping him academically:

And the same with the do not expect what you don’t inspect. Especially in the Army if you don’t check it then nobody will do it you can you can say go shovel the snow and it will never get done unless you go out there five minutes later you’ll be going where is everybody? Or being very specific in assigning, just never say hey you guys, I need three people your names are Alpha, Bravo, Charlie. That definitely translates well into school because nobody does tasks in a group unless you specifically say you know student A or student B or you know I have a couple of others I’m currently working with, do this specific task here’s the template and here’s what it looks like.

When his unit was learning a new piece of equipment, he was selected to be the subject matter expert for training his unit on the equipment. The skills that he learned during this time he has found useful in helping other students learn:

So there I kind of learned the template for learning a task, instructing it to others, and then using the task, condition, standards with which to ensure they actually learned the task. So that’s been pretty helpful for me along the lines of being able to, not that smart but I feel like I have a pretty decent amount of common sense. So a couple of my peers here along the way at school would come to me with a lot of questions that I don’t necessarily think are the easiest to explain and knowing how to break down the questions,
break down tasks and stuff like that, being able to explain them to other people I found is useful.

His next promotion was to squad leader in charge of eight soldiers. One of the lessons he learned during this time was to delegate. A second lesson from this experience was that if you don’t think your subordinates are capable of completing a task, you have to teach them how to do it. He got out of the Army mainly because he placed a high value on graduating from college and because he felt soldiers were getting promoted whether they deserved it or not just to fill shortages.

He came back to college and chose petroleum and natural gas engineering as his major because of the impact he had seen in the area around his home in southwestern Pennsylvania. Another reason for his choice was the impact he had seen in Alaska where every resident receives a dividend check each year. In addition, he liked the lifestyle that was available to oil and gas workers where they work fourteen days and have seven days off. He has been very happy at WVU, especially with the chairman of his department who worked with him to set up a schedule allowing him to graduate in only two years, illustrating his interaction with the college microsystem. However, he was unhappy with one of his professors who would put incorrect data sets online making homework impossible to solve. This experience is one of the institutional barriers mentioned previously. He expressed two goals in college: getting a good GPA, which he is doing with at 3.14 overall, and earning a 4.0 in his major courses. This is opposed to his first time in college where he had a 2.78 because he says he built a race car rather than doing homework. The other goal was learning how to problem solve:

Not necessarily the learning everything but learning how solve problems at least in the engineering track being able to break down a complex problem and say well I don’t
necessarily know how to answer these individual pieces but I know what pieces I can answer and how they go together and how they fit together. So that is what the profession is, you know if you graduated as a chemical student being able to at least look at stuff. Look at a petroleum engineering problem and say okay I see what you gotta do here to get from A to B.

One of the experiences he enjoyed the most was an internship with an oil and gas company and he felt his veteran status played a large role in getting the job. This is an example of an interaction with the job microsystem:

That was fun the first day you show up here’s your of pair jeans, fire retardant jeans and a t-shirt and a brand new pickup truck the oil pad is that way. I think most kids, if you give most kids an eight digit grid and said here’s where the well pad is they would look at you like you were crazy. I was like alright sounds good. And my boss was a graduate of the Naval Academy so that kind of worked well. This other guy that I worked with was a Marine and our head boss in Pittsburgh was an Army guy so I think that really played into it.

He was frustrated that some classes from his first school did not transfer to WVU. The literature mentions students being unhappy with military credits not transferring but does not mention transferring credits from other schools. From my experience as an academic advisor, I know that this concern is not limited to student veterans. Similarly to other student veterans, he also experienced some frustration with his peers not being motivated. What was different in his case was this student veteran was involved in athletics, specifically the rowing team. He also had to accept that unlike in the Army, there was really nothing he could do to change their behavior:
And it was kind of challenging to accept that not everybody is as motivated to put in the time and you wouldn’t think it would be that challenging to wake up at 6:00 in the morning. And so that was incredibly frustrating having people just not show up on a Tuesday morning because it’s 6:00 AM and they were up late last night. Challenging lowering the expectations and knowing you don’t have any authority over anybody to say like hey wake up or I’m going to screw your life for the next week and you are going to find yourself carrying an alarm clock everywhere you go just to teach you a lesson.

He, like several student veterans in this study emphasized using exercise as a means of dealing with stress. His biggest stress was the fear that he was not doing enough on his projects, saying that because there was always more that could be done it was hard to decide when to stop. He also felt that the stress was much lower in college than in the military. This is obviously the case when comparing combat situations to college; however, this student was talking about something different, as expressed below:

I don’t know I just feel like the level of stress associated with college is much different than the level of stress you know having seven kids underneath you two of which are inevitably going to get a DUI over the weekend and then you’re going to get your ass chewed on Monday morning for it. And no matter what you do you can’t prevent it.

When asked how he managed his time, he said he used a planner, like several other student veterans. He did relate that this habit came from his experience in the military where he carried a “dirty little notebook,” what he called a leaders book, to write in. He expressed that he liked the team leader role in working on projects. He had a unique way of becoming the team leader, as he explains below:
Whoever speaks up, raises their hand says I want to be team leader they’re always the first to fail. So you let them fail and you can just step in and then they won’t be nitpicking you for every little leadership thing you do differently or everything you don’t do the way they thought it should be done.

In the future he sees himself initially working a job that has a work schedule where he can work for several weeks then have a week off, as mentioned before. That schedule will allow him to pursue things he enjoys like backpacking and skiing. He also feels that he will eventually want to move into more of a management position that allows more stability.

From this student veteran’s story, we see several things that other veterans and the literature have highlighted: the ability to manage stress through exercise, taking leadership roles in team projects, although he did express a rather novel way of getting those roles; frustration with peers being unmotivated; time management through the use of a planner. Additionally, he highlighted being able to teach others, which did not show up in the literature. He also felt that his veteran status helped him get experiences others may not have, specifically in his internship. His military experience actually played a large part in changing his major from mechanical engineering to petroleum and natural gas engineering.

He shows two interactions with the College microsystem that are rather unique. First he related talking with the Dean at his first school and being encouraged to join the military. Secondly, he related talking with the department chairman to work out a schedule allowing him to graduate in two years. When he discussed his internship he related interactions with both a supervisor and a co-worker in the Job microsystem.
When he discussed how a position and title do not necessarily making a leader, the position and title are clearly institutional identities while the skill of leadership is a discourse identity. Being a good runner is an example of a nature identity. When he discusses being a good communicator that is an example of a discourse identity. Two discourse identities work together when he describes how leadership skills developed in the Army translates into being a leader on group projects. When he describes having a decent amount of common sense he is talking about a nature identity and he relates that to a discourse identity of being identified as someone who other students can come to for getting help. When he discusses learning how to solve problems as part of the engineering track he is showing an affinity identity as an engineering student. He discussed a conflict between his affinity identity as a veteran and as a student athlete when he stated the he was frustrated he couldn’t use some of the technics used in the army to discipline students who wouldn’t show up in time for practice.

*First in Family*

This story is about student veteran Oscar, a 26 year old male Latino student veteran who is majoring in electrical engineering. He is the first one in his family to get a college education. He served five years in the Navy as an electronics technician. During boot camp he learned to help manage his stress by developing a routine he followed every day. His training to be an electronics technician occurred in Navy Accessions Training where he developed his study habits because he had not had to study much in his high school education. His first deployment was in the Pacific and included Guam, the Philippines, Japan, Korea, China, and South East Asia. During this deployment he was exposed to many different cultures. Next he went to the Naval Special Warfare community in Special Reconnaissance Team Two where he transitioned into a supervisory role and where he described himself as a workaholic. During this time he
deployed to East Africa, specifically in Kenya and Somalia, saying that, “I’d barely sleep I was just in my office pretty much 24/7 seven days a week during that time period.” His take-away from that position was he learned that while he needed to work hard, he also needed to make time for things that were important to him. He decided to leave the Navy because he wanted to do more for himself, as he explains below:

And reflecting back to what I learned from those deployments I wanted to pursue something generally and dedicate most of my time to something that solely I desire. It was great serving my country and helping my other shipmates out but I wanted to focus more on myself as opposed to continuing several more deployments. Because I knew for a fact if I was going to stay in I’d be overseas 24/7. I was just one of those people I just loved it.

The statement above that he was one of those people that “just loved it” is an example of a nature identity. After leaving the Navy he took a job at the FBI center as a paralegal analyst. From there he transitioned to an engineering student. As a slightly older student, other students seem to look up to him and he enjoys helping them. This again points to the attribute other student veterans have shared of teaching others:

And then through WVU I came in still an undergrad and I mean I’m still relatively young in my 20s. But you know it’s still fairly older than most undergrad kids. Especially most of my classes so I ended up quickly finding myself in spots where a lot of the kids in my class will come up to me for advice or study tips or just basic information on classes or just anything really. I get often time called “pops” in class, I’m like really I’m 26 I’m just like the same age as the graduate TA here. Give me a break, I learned quickly that it’s a
good thing that I’m not just absorbing knowledge from class but also like helping your other classmates your other people around and passing that knowledge down.

Although there is an age difference between him and many of his classmates he says that he enjoys working with them, unlike many other veterans who were upset by other students’ immaturity. This again points to the attribute other student veterans have shared of teaching others:

Like myself, I’m like 26 and I’m talking like I’m in my 50s but young people in general and like that I can treat them like adults and they know how to act as adults. I mean they are still learning and I’m still learning, we’re all still learning but like very much so and it’s great working with them. I thought I could end up work with civilians since I left a military base but it’s, it’s not been too tough honestly.

College has not been especially easy for him. He took only the minimum number of math classes that he had to take in high school and even that was seven years ago for him. He felt frustration many times, saying, “I remember there were literally times especially with my calculus and my physics work that I literally just thought to myself, I’d rather, I’d rather be dealing with a mortar strike right now.” However, he got a lot of help from his classmates catching up with the material. One skill he attributes to his military training is not being afraid to ask questions:

I learned to toughen up and be quite humble during the military. So I am definitely very comfortable with asking darn near any question I want. No matter how traditionally stupid it may seem. And I don’t really care about other people’s images, some people like my girlfriend says I need a little more social grace and tact. I lack those but at the same
time it helps when it comes to asking those things or knowing that I have the right answer. That this is the right course of action but people might not be brave enough or socially comfortable enough doing it.

Some of the resources he uses to be successful include office hours and YouTube. Several of the student veterans in this study mention using the internet for help on their homework. He feels comfortable in the leadership roles on team projects but also enjoys when “we just all work in unison and just promote with the best idea and go forth through that.” One of the resources he made use of on campus was the veterans’ study rooms. Another resource was the student veterans’ club. “It’s nice meeting other and talking to other people in a casual environment that at least know or understand your perspective, know where you are coming from.”

He wants to continue his education and eventually receive his Ph.D. Similar to other student veterans in this study he would eventually like to go back into government service, either with the Department of Justice or the Department of Homeland Security.

This student was classified as a less aware student because he did not emphasize using skills he learned in the military in his education. He did share the attribute of enjoying teaching others which several other veteran had mentioned. He placed a lot of emphasis on completing his degree which could be interpreted as a mission focus mentioned in the literature and by professors.

He had interactions with the College, Support Group and Job Microsystems. He mentions his girlfriend which is an example of the Support Group microsystem. When he says that he is not afraid to ask any question in class this is an example of an interaction with the College
microsystem. Finally, when he discussed working at the FBI and taking classes he shows an interaction between the Job microsystem and the College microsystem.

Similar to the other stories he displays a variety of different identities. Both the paralegal analyst at the FBI and engineering student are examples of an institutional identity. When he talks about being called “pops” in class this is an example of a discourse identity. When he discussed that he would rather be in a mortar attack than working on physics, he showed a struggle between two affinity identities, one of a college student and the other of a veteran. The statement about social grace, tact, and being regimentally oriented are an example of a nature identities. The social grace and tact identities seem to clash to some extent with wanting to fit in to his affinity identity as a college student. He discussed not receiving acknowledgment for all his hard work when he left his job and this shows disappointment in no acknowledgment of his discourse identity as a hard worker. He also discussed the feeling that his military affinity identity would make it hard to work with his student affinity identity but has realized that is not the case.

**Conclusion**

In this chapter the following sections were discussed: student veterans’ comparison to literature, professors’ comparison to literature, more aware versus less aware, ecological systems, and narrative inquiry stories. In the student veterans’ comparison to literature section many of the same facilitators and barriers were identical to what was found in the literature. One attribute that was not mentioned in the literature was enjoying teaching others which was mentioned by several students. Another attribute mentioned by several students and not found in the literature was the ability to manage stress. Several of the student veterans mentioned exercise as a means of managing their stress that they related to physical training in the military. An issue
that came up repeatedly among the student was being irritated hearing from their professors that they, “…should have learned this in high school.” The professors also had many of the same facilitators and barriers that was present in the literature. One attribute highlighted by the professors was the increased employability of a student veteran as opposed to a non-veteran student because of their military experiences. This was not present in the literature or mentioned by the students. When discussing the National Guard students emphasized the negative aspects. In comparison, the professors emphasized positive aspects such as practical engineering experience and better time management skills. When comparing the facilitators that student veterans discuss there were several differences between what the student veterans who displayed more of an affinity identity as a veteran and were more aware of the skills they developed in the military compared to those who displayed more of an affinity identity as a student and were less aware. Students who were more aware emphasized that they normally took the lead on team projects. The more aware students also seemed to be more prepared to deal with stress. The more aware students all expressed a strong work ethic. Over half of the more aware students used some type of planner to help manage their time. Several of the less aware students emphasized understanding the material they were learning, while none of the more aware students emphasized this. The ecological systems section identifies three different sets of ecological systems that fit the student veterans in this study. Three of the student veterans were in the Guard ecological system and two were less aware with one being more aware. In the job ecological system there were five student with three in the aware category and two in the not aware category. In the final ecological system there was two more aware student and two less aware students. In the final section, narrative inquiry stories, four stories were told of student veterans experiences and how they relate to their pursuit of an engineering degree. Three of these students
were in the more aware category and one in the less aware. All three of the ecological systems were represented through these stories.

In the next chapter barriers and facilitators present in this study but not covered in the literature are discussed. Additionally, how the ecological systems can be used to benefit student veterans is addressed. The effect of combining graphic elicitation and a narrative inquiry is discussed. Recommendations are provided on the composition and implementation of a veteran student orientation, mentorship program, tutoring, academic advising, faculty and staff training, and recruitment. Finally, concerns and limitations of this study are discussed.
Chapter Five Discussion

As an academic advisor and a student veteran, the motivation for this study was to understand the experiences of student veterans in engineering programs with the goal of using the information to find ways to help student veterans be more successful in pursuing an engineering degree. As is evidenced by the Supporting Veterans in Science, Technology, Engineering, and Mathematics (STEM) Careers Act (S. Res. 153, 2020), helping student veterans become more successful in STEM career fields is important to the future of the United States. With my experience in the military and as a student, coupled with my experience as an academic advisor in the Department of Mechanical and Aerospace Engineering at West Virginia University, I understood that there were skills that student veterans had gained through their military service that would make them better students. In this study I investigated this possibility through two research questions: What are the experiences of veteran engineering students? and, How has military service impacted those experiences? In this chapter, I discuss the results of the analyses. Next, I use these results to make recommendations for supporting student veterans in engineering. Finally, I discuss limitations of this study and recommendation for future study.

Barriers and Facilitators

I found that many of the same facilitators and barriers that applied to student veterans, in general, based upon the literature applied to student veteran engineering students. As an example, facilitators that were the same included good time management skills (Ackerman et al., 2009), working well in teams (Church, 2009), and self-discipline (Main et al., 2016). Examples of a barrier that was the same was the challenge of the transition between military and college (Bauman, 2009) and the frustration with working with less dedicated peers (Persky, 2009). The literature focused on diminished study skills (DiRamio et al., 2008); however, in this study the
student veterans reported improved study skills. I also found several facilitators and barriers that were not mentioned in the literature. Facilitators not mentioned in the literature included good communication skills and strategies for dealing with stress. Barriers not mentioned in the literature included frustration with the phrase, “You should have learned this in high school.” This phrase irritated several student veterans who either never had the subject in high school or had been out of high school for an extended time and forgot the material.

**Similarity to the Research Literature**

The fact that many of the barriers and facilitators were the same as the literature review is not surprising. Although the focus of vast majority of the literature was not on student veterans in engineering majors, it was still on veterans attending college. Regardless of major, it is reasonable to expect that the barriers and facilitators would be similar for all student veterans. Good time management skills were mentioned in the literature (Ackerman et al., 2009). What was not mentioned in the literature were the tools to help student veterans manage their time. Several of the students in this study mentioned using a planner to help manage their time. Several related this back to carrying a note book or “leader’s book” in the military.

Study skills were mentioned in both the literature and this study. The focus on study skills in the literature was on diminished study skills (Di Ramio et al., 2008; Livingston, 2009; Ackerman et al., 2009; DiRamio and Jarvis, 2011). What was surprising was that in this study several student veterans mentioned improved study skills. Student veterans Oscar and Golf both mentioned improved study skills. An explanation for this could be that some military jobs are more technical than others, and require significant study time to learn. A student veteran who was in the infantry likely focused more of his time in the military on physical fitness, marksmanship, and tactics. This is opposed to someone who was an aircraft mechanic like
student veteran Golf or an electronics technician like student veteran Oscar. Depending upon the job in the military, student veterans will likely bring different abilities to apply to their academics. While an aircraft mechanic may have developed study skills superior to someone who was in the infantry, the person in the infantry may have superior leadership skills compared to an aircraft mechanic.

Self-discipline was mentioned in both the literature (Ackerman et al., 2009; Main et al., 2016; Dalcher, 2014; Ely, 2008) and by student veterans and professors. The literature and student veterans related this to a focus on academics rather than the social aspect of college. One of the main reasons cited by both the literature and student veterans was that student veterans were often older than their non-veteran peers and placed more value on an education. The professors also emphasized that the self-discipline shown by student veterans had a positive influence on their non-veteran peers.

Student veterans’ ability to work well in teams was mentioned repeatedly in the literature (Church, 2009; Redden, 2008; Main et al., 2016). In this study the ability to work well in teams was mentioned by both student veterans and professors. What seems contradictory was that both the literature (Dalcher, 2014; Persky, 2009; Livingston, 2009) and student veterans along with professors, mentioned student veterans having issues working with less dedicated non-veteran peers. I believe the answer to this conundrum lies with student veterans assuming leadership roles in teams. Both the literature (Main et al., 2016; Steele et al., 2010) and student veterans and professors mention student veterans taking the lead in teamwork. As a leader, student veterans are obviously going to have issues with other students who are not pulling their weight. The ability to guide these less motivated students to contribute more through their leadership is one of the keys to making student veterans good team members.
One of the barriers mentioned in both the literature (Bauman, 2009) and in this study was the transition between the military and college. In the Bauman (2009) article, this barrier was discussed from the perspective of someone who was deployed while in college and then reentered college after the deployment. In this study this transition was mentioned for students who were in the National Guard while in college and would miss school for drill weekends. In both cases student veterans related that it was difficult to transition between the rigid structure of the military to the much less structured environment of college. In addition one of the student veterans in this study expressed the challenge of being in charge of subordinates on National Guard drill weekends and leading them, then coming back to lead a team on an engineering project. Two different styles of leadership were required to accomplish both tasks. Leadership certainly is more than simply getting someone to do something for you; however, this one small facet of leadership will illustrate a difference between leading in the military and leading other students. Although it is not always this easy in the military, generally in my experience, if you order someone to do something they do it. In my experience as a student not only can you not order someone to do something but asking them to do something in many cases will not mean that they will do it.

Facilitators and Barriers Unique to this Study

There were several things that were present in this study that did not appear in other studies. The literature has not mentioned that some student veterans seem more aware of what they have learned in the military and how to apply it. All of the students in this study seemed aware that they had learned some things in their military service that could be useful in their academics. For example, many student veterans related that they developed a drive to succeed in the military. Student veteran Echo expressed it this way “So you might have time off but you
stay so busy so you get to a point where you get restless and you can’t sit around and watch TV you just have to be doing something.” However, there was a difference in how they identified, either more as a veteran or more as a student. This was evident in the way they addressed their academics. For example student veteran Alpha, who was categorized as more aware, approached assignments as follows, “…because of the military I have always been on top of my homework and my studies and like I get a homework and I start on it immediately.” While student veteran Golf, who was identified as less aware had this approach to homework, “…like if it’s something that I don’t want to do I’ll procrastinate the crap out of it.”

The literature did not mention that student veterans enjoyed teaching other students. This observation was mentioned numerous times in this study, surprisingly equally by students I had classified as less aware of what skills they had learned in the military as by students I had classified as more aware. Regardless of which category this fits into, more or less aware, I feel that this is an important discovery. Veteran students may be well suited to be tutors or teaching assistants. They have several competencies brought out by this study that would be an asset in this role: a good work ethic, well developed time management skills, and higher levels of maturity based upon professors’ comments, and knowledge of how to apply tools to make them more efficient students.

The student veterans used such tools as a planner to list when all work is due, and how to apply a timeline in setting completion dates for phases of a project. Finally, many of the students stated that they use the library as a resource for studying. The use of planners and the library are resources that I emphasized as an academic advisor. These resources often fell on deaf ears because I was the staff member recommending them. If they were recommended by student
veterans who are in the same curriculum, possibly more students would consider these as viable options.

Communications skills were mentioned by several student veterans. One veteran related how he had learned important communication skills when he was working with different units as an intelligence analyst. Another student veteran felt that he was able to communicate well with other non-veteran students because of his experiences dealing with diverse teams in the military. These communication skills could be very valuable in activities like tutoring.

Many of the students expressed an ability to deal with stress because of their experiences in the military. Starting with basic training and continuing for many with deployments into combat, they learned techniques to help ameliorate stress. While other non-veteran students learn how to deal with stress of working on assignments on their own, the stress relief techniques that the military instills may be much more effective.

**Ecological Systems**

Three ecological systems were identified which applied to the students in this study. The three ecological systems that were identified are National Guard, Job and College. These systems provide a look at points of intervention for student veterans that may not have been previously considered. These ecological systems highlight the fact that although student veterans may share some common characteristics their experiences in college are all unique. For example someone who is in the National Guard is interacting in an environment in that is much different than the college environment. As an example the National Guard is a much more structured environment where it is clear by the rank displayed on a uniform where someone fits into the structure. This may require different supports to ensure they are successful in college. Similarly the support
mechanisms for each student will be different. While some may rely on family for support others will rely on friends or partners. Helping students find good support mechanism, for example the student veterans club, can help them overcome challenges in their academics.

**Combining Graphic Elicitation and Narrative Inquiry**

Another unexpected finding was how well graphic elicitation in the form of a timeline and narrative inquiry work well together as a methodological approach. The timeline allowed students to consider their life story in a very methodical way as it related to the military and college. Had I just asked questions, I don’t feel that students would have related as much as they did with the timeline. For example from basic training student veterans related that they gained skills in time management and attention to detail. From their advanced training many learned good study habits. From their time in different military units they learned what made good leaders and poor leaders. These were all things that may have been overlooked in this study had it only consisted of interviews. As stated prior, this observation may have been because student veterans are normally familiar with a timeline because so much of their military training has required backward planning. It may be the case that a timeline does not work as well with others who are not use to planning in this way and would be an interesting case for further study.

Graphic elicitation according to Bagnoli (2009) may bring out repressed memories. I was nervous that, in using this tool with student veterans, it could bring out unpleasant memories from combat situations. That did not happen in this case, possibly because I specifically stayed away from asking the student veterans I interviewed about their experiences in combat. Several student veterans discussed deployments and lessons they had learned from their deployments but specific combat situations were not discussed.
Recommendations

In this section recommendations on a student veteran orientation, mentorship programs, tutoring, academic advising sessions, faculty and staff training, and recruitment are provided. These recommendations are intended to improve the performance of student veterans in engineering. A challenge with many of these recommendations may be in getting student veterans to participate. Both the literature and results of this study have highlighted that in many cases student veterans are more comfortable around other student veterans. An approach to this is to involve student veterans who are already in engineering majors to encourage student veterans new to engineering to participate.

Ecological Systems

It may be advantageous for students who are in the Guard or Job ecological systems to discuss with their supervisors when they have major requirements coming due in their classes. This simple discussion could alleviate some of the conflicts that appear every semester. Another possible intervention that could be helpful within the Guard ecological system would be the interaction between the Veterans Center and the Guard Supervisor. In my experience professors have little interaction with anyone outside of the college ecological system. Expanding this interaction to other ecological systems could be beneficial to students. A simple form letter to supervisors outlining significant dates of tests, projects due dates etc. could be beneficial to student veterans and non-veteran students alike. To avoid adding to the work load of professors, I would recommend a form letter that the student filled out and had professors sign. This would put the burden on the student but would help both. The letter could be as simple as “These are the days I have tests; these are the days I have major assignments due.”
Student Veteran Orientation

In line with the literature, (American Council on Education, 2010; Persky, 2009) the findings of this suggest that a separate, veteran-specific orientation be conducted. I recommend a separate orientation for those veterans who are majoring in engineering. Many of these student veterans will have been out of school for an extended period of time and will be anxious about going back to school. Additionally, many may have attempted school the first time and not been successful. Although I did not ask specifically if students had attempted college prior to the military, four of the students I interviewed mentioned that they had gone to school previously and three of the professors mentioned that they know students who had attempted college prior to the military and been unsuccessful. Many of these students will be unaware that they have developed competencies that can be beneficial to them in their school work. In addition to things recommended in the literature to be covered, such as applying for the GI Bill and required credit hours per semester, highlighting competencies that many student veterans have developed may ease some of the initial anxiety and make them better students. Competencies that should be addressed include: time management, leadership, ability to work in teams, attention to detail, the ability to manage stress, self-discipline. These competencies are not normally found in traditional students and would be one way this would differ from the typical student orientation. Staff from the veterans’ center should be available to introduce themselves since student veterans will have to interact with them on a regular basis. Additionally, resources that many student veterans use that they considered helpful, such as use of a planner and studying in the library, should be discussed. Having the use of these resources explained by student veterans who are currently in
the program would likely be more effective than having a staff or faculty member from the Statler College explain them.

**Mentorship Program**

The literature (Mobley et al., 2021; DiRamio et al., 2008; Steele et al., 2010) mention mentorship as being an important resource for enabling student veterans to be successful. Establishment of a formal mentorship programs within the Statler College would be beneficial to students in several ways. First as noted by Professor India, student veterans should have opportunities for sharing their experiences. One way students could do this is through a mentorship program. Successful student veterans in the program could help guide new student veterans in areas like developing good study habits, time management techniques, and preparing for exams. Student veteran Tango mentioned that he was currently doing such mentoring in an informal manner. Several student veterans described feeling more comfortable around other student veterans and a mentorship program would be another way to help meet other successful student veterans. Additionally, faculty mentors could be very helpful. Student Veteran Charley mentioned that he had a great mentoring relationship with a professor whom he felt comfortable going to with any problem. Faculty members who were interested could receive some initial training in mentorship techniques, and facilitators and barriers that student veterans face.

**Tutoring**

Several of the student veterans expressed that they enjoyed teaching other students. Additionally, several student veterans had tutoring sessions with student veteran Alpha and remarked at what an outstanding tutor he was. While I’m certain that not every student veteran would be an outstanding tutor, an effort to recruit them as tutors could be advantageous to both
the students and the college. Because I was responsible for administering the tutoring program in the Department of Mechanical and Aerospace Engineering for several years, I know that finding the best tutor is not always as easy as choosing someone who had an A in the class. The tutor needs to not only understand the material well but be able to teach it also. Some student veterans may have the ability to do this very well. The college provides funding for tutors in several introductory subjects so possibly some funding could be made available specifically for student veterans to acts as tutors. The veteran’s center is another possible source of funding.

**Academic Advising**

In initial meetings with students, academic advisors should determine if students are veterans. As the research shows (Main, et al., 2016; Smith, 2012), some students may not want to share that they are a veteran, but for those who do wish to share knowing this information would be beneficial to academic advisors. In addition, some student veterans appear to be more aware of the competencies they have gained than others do. Making all student veterans aware of the competencies they likely gained through their service would be beneficial. Specifically, advisors should share information on how other student veterans had been successful. Below is a recommend list of questions advisors could use with student veterans.

1. Have you ever served in the military? While a simple question it is not one that many advisors in my experience ask.

2. Are you currently in the Guard or Reserves? Student veterans who are currently in the Guard or Reserves have the possibility of being called to active duty or being required to miss school for drill or annual training. This requirement can affect their studies very adversely and, as a
result, advisors may want to recommend adjusting the number of credits students are taking in a semester.

3. What tools do you feel you developed in the military to help you be successful in college? This question can provide clues as to how the advisor wants to proceed. If the student recognizes the competencies they have gained through the military, it may not be necessary to go into further details. Below are questions that can be used as follow ups if student veterans don’t recognize they may have these tools.

4. How did you learn in the military? Some students expressed that the military helped them with study skills while others felt that how they learned in the military was not applicable.

5. What tools did you use to manage your time in the military? Several students indicated the use of planners as a tool they had used in the military was very beneficial in managing their assignments.

6. Are you comfortable working in teams? Many student veterans have had extensive work in the military in teams. While many appear comfortable working in teams, there is also evidence that many become frustrated because of lack of motivation of other team members. Talking with student veterans about this may lessen some of the frustration that many feel working with their non-veteran peers.

7. Do you like teaching others? Several students indicated that through learning how to conduct training in the military, they discovered that they enjoyed teaching others. This may lead to identification of students who would make good mentors in the future.

*Faculty and Staff Training*
It would be helpful for faculty and staff to understand the assets that student veterans bring to the classroom. In addition to assets student veteran concerns should be included in the training. The concern that was found during this inquiry that has not been found in the literature is professors telling students, “You should have learned this is in high school” and not reviewing the subject material. Many of the veterans had been out of high school for several years. Others had not taken college preparatory type classes in high school. While it is impossible to cover everything that was covered in high school in a college class having sources available to review this material would be very beneficial for some student veterans.

**Recruitment**

The Statler College may want to invest more effort in recruiting student veterans. This recruitment could help with the current issue of decreasing enrollments. Professor Kilo specifically mentioned this in his interview. Student veterans in this study have performed equally well academically as their non-veteran peers. Additionally, as discussed, they bring a level of maturity to the classroom, help ensure assignments are completed both on time and with all components. They also come with guaranteed funding through the GI Bill. Each military post has an education center; getting recruiting material into these education centers could pay dividends for the Statler College. In addition to recruiting materials, having someone available to make on-the-spot admissions decisions for veterans would be useful. Several student veterans in this study expressed frustration with how long admissions decisions took.

**Curriculum**

Many student veterans have developed skills and attributes through their military experience that make them very valuable members on a team project. Communication skills,
leadership, attention to detail, and motivation are a few of these skills and attributes. Student veterans should be encouraged to join team projects early in their academic careers. One way to do this would be to create electives that are linked to team competitions and senior design projects. There is currently no design project in the fundamentals of engineering program at WVU. Incorporating a design project that lets student veterans use their skills would be one way to help ease the transition from the military into college. Being involved in team projects at the freshman level could also help with the complaint that many student veterans had about other non-veteran students being disrespectful and immature by having them serve as role models to other students.

I also recommend the development of online classes that would serve as a refresher, specifically in math and science. Student veterans would have input into what was needed in this curriculum. Specifically what things that they “should have learned in high school” needed to be included in the online classes. Additionally, professors from the math, physics, and fundamentals of engineering departments could identify areas that student veterans as well as other nontraditional students have problems with. Making this content available online would allow students to complete the work prior to arrival at WVU if they wished.

**Concerns and Limitations**

**Concerns**

One concern regarding selecting student veterans from veteran engineering students within the Statler College population for this study was that they may have been intimidated because of my position in the Statler College. When the interviews were conducted, I had a power position within the Statler College in that I was an academic advisor to many of the students I interviewed. Another concern was that I was a commissioned officer, having
graduated from the United States Military Academy at West Point. All of the students except one were enlisted members in the military. There is a divide in the military between officers and enlisted soldiers, possibly similar to the divide between professors and deans at a university. The difference our former ranks may have been a distraction. Because of my role as an academic advisor and veterans’ advocate in the college, I had a good working relationship with several of the students-participants. I felt that this relationship lessened the intimidation factor. I did not mention my rank in the military during the interview unless students specifically asked. This lessened the possible tension that may have arisen based on differences in military rank. Another means of addressing these potential barriers was by emphasizing that I also was currently a student.

**Limitations**

This study consisted of only male participants. Female participants should be included in future studies. Only 20 percent of the engineering students at WVU are female. The race of the student veterans in this study was predominantly white and future studies should be more diversified with respect to race. However only 17 percent of the engineering students at WVU classify themselves as a race other than white (R. Sigler, personal communication, February 1, 2022). In order to address these barriers in future studies, additional schools may need to be included. Not all engineering majors were represented in this study and future studies should include all majors. Members of the faculty were included in the study as a means of triangulation of the data. Future studies should include members of all departments. This study only considered student veterans who were currently in an engineering major. Inclusion of student veterans who changed majors out of engineering or left college would provide additional insights that could be useful in helping student veterans be successful.
This study was limited to engineering student veterans. I suspect that the findings in this study would apply to student veterans in other STEM fields. In addition to STEM fields I believe that the findings would apply to student veterans in virtually all fields. Regardless of academic major skills like time management, work ethic and stress management would seem to apply to improving academic performance.

**Summary**

In this section explanations were provided for the attributes and barriers that were discussed by student veterans and professors in this study. There were several attributes and barriers that were discuss in the literature that had different interpretations in this study. As an example, study skills were mentioned in both the literature and by student veterans in this study but the emphasis in the literature was on diminished study skills while the emphasis by student veterans in this study was on enhanced study skills. Findings that were not present in the literature review were also discussed. The fact that many student veterans enjoyed teaching others was one skill mentioned in this study that was not present in the literature. How to use the facilitators that student veterans in this study possessed was outlined for the areas of student orientation, mentorship programs, tutoring, academic advising, faculty and staff training, and recruitment. Finally concerns and limitations of this study were discussed.

This study adds to the literature on student veterans in general and student veterans majoring in engineering in particular. The study was conducted at West Virginia University in the Statler College of Engineering and Mineral Resources, the largest engineering program in West Virginia. Twelve student veteran engineering students and five professors who taught in the Statler College were interviewed. The use of graphic elicitation in the form of a timeline and
reflexive interviews were used to collect data from the student veterans. Data was collected from professors through the use of an interview only.

**Conclusion**

This study used Constructionism, Discourse as described by Gee (2011), and part of Ecological Systems Theory by as described by Neal and Neal (2013) as a theoretical perspective to examine the data. Some students appeared more aware of the skills they had acquired through their military service and how to apply them to their academics than others. This difference was determined through Discourse Analysis. The application of portions of Ecological Systems Theory described by Neal and Neal (2013) led to the discovery of three systems that applied to the student veterans in this study. Four stories were told using a narrative approach based on information provided through a combination of student veteran’s timelines and answer to questions in the interviews.

Many of the same barriers and facilitators that were present for other student veterans in the literature review also were present for the student veteran engineering students in this study. One of the barriers that was the same in both the literature and this study was the frustration working with non-veteran students who were not motivated. One of the facilitators that was the same in both the literature and this study was the ability to work well in teams. A possible explanation for this seeming confliction was the ability to apply the leadership skills the student veteran learned through their military service. Facilitators that were not mentioned in the literature included communications skills. Additionally, from a methodological approach, the use of a timeline and narrative analysis seemed to work well together.

A proposed usage of student veterans’ facilitators was provided in the recommendations section. One recommendation was that the facilitators student veterans possessed would be a
good topic for student orientation. Another recommendation was that student veterans may be a valuable resource as tutors. Additionally, the establishment of a mentoring program using both student veterans and professors would be a valuable addition to the Statler College.

Finally, concerns and limitation of this study were provided. Concerns focused on that fact that I was an academic advisor in the Statler College when the majority of the interviews were conducted. This may have intimidated some of the student veterans and influenced their answers. The main limitation of this study was that no female student veterans participated in the study. There is a large amount of literature on female student veterans in general but very little on female student veteran engineering students. This is an area that should be explored in the future and may require the participation of several universities to gather a sufficient pool of female student veteran engineering students.

One final point I want to emphasize is that all student veterans are different. The lenses of Discourse Analysis, Ecological Systems Theory and Constructionism and the methodology of Narrative Inquiry allowed me to see the nuances in their experiences. They likely have developed some skills through their military training that are useful in their academics however, these skills will not be exactly the same from veteran to veteran. Additionally, they each may face different barriers to completing their education. Academic advisors, faculty, and staff getting to know each student veteran and addressing their specific needs will help them all be successful.
References


Aljohani, O. (2016). A comprehensive review of the major studies and theoretical models of student retention in higher education. Higher Education Studies. 6(2), 1-17. http://dx.doi.org/10.5539/hes.v6n2p1


*directions for student services, 126, 35-43.*


https://doi.org/10.3390/socsci10060228


the engineering pathway: Student veteran’s decision to major in engineering. Paper presented at the ASEE’s 124th Annual Conference and Exposition, Columbus, OH. Paper ID Number 18111.


https://discovery.ebsco.com/c/y2m5o4/viewer/pdf/xvrofow3tv


U. S. Department of Veterans Affairs. (n. d.) *Yellow ribbon program.*

[https://www.benefits.va.gov/gibill/yellow_ribbon.asp](https://www.benefits.va.gov/gibill/yellow_ribbon.asp)


[http://catalog.wvu.edu/undergraduate/collegeofengineeringandmineralresources/](http://catalog.wvu.edu/undergraduate/collegeofengineeringandmineralresources/)


Western Illinois University. (n. d.). *Veterans and servicemembers.*

[http://www.wiu.edu/student_services/veterans/](http://www.wiu.edu/student_services/veterans/)

Western Michigan University. (n. d.). *Military and veterans affairs.*

[http://wmich.edu/military](http://wmich.edu/military)


Bill. https://ivmf.syracuse.edu/wp-content/uploads/2016/05/Missing
PerspectivesACC_03.02.18.pdf
### Appendix A

#### Student Timelines

Figure A1

*Timeline Student Alpha*

<table>
<thead>
<tr>
<th>Basic</th>
<th>Tech School</th>
<th>1st Deployment</th>
<th>2nd Deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention to Detail</td>
<td>Technical Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discipline</td>
<td>Long Hours, Long Classes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How to perform</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under High Stress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costs &amp; Responsibilities</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Aircraft specific: KC-135

- 1st Time as a Leader/Supervisor, teenager, 18 hr days
- learned how to be a leader at my job.
- Exhilarating
- Responsible for leading aircraft to meet their mission.
Figure A2

*Timeline Student Bravo*

AIT
1-187
2nd PLT

Separation from family is hard
Not all leaders are good. Not all soldiers are professional

Deployment
1-187
3rd PLT

War isn't what it used to be. It's hard to have care as much about a family while being in the infantry

After deployment

WVU

Leadership doesn't care as much about a family
**Figure A3**

*Timeline Student Charlie*

<table>
<thead>
<tr>
<th>DSUT</th>
<th>101st ABN</th>
<th>101st ABN</th>
<th>W.V.U. Statler College of Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit</td>
<td>Rifleman</td>
<td>Sharpshooter</td>
<td>Fire Team Leader</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mechanical Engineering Student</td>
</tr>
</tbody>
</table>

- Things are darkest just before the dawn. Keep going.
- How to separate the personal from the professional.
- Importance of teamwork and accountability.
- Leadership and setting a good example for others.
- How to better communicate with others different than myself and the benefits of academic pursuit.
Figure A4

**Timeline Student Delta**

<table>
<thead>
<tr>
<th>Basic/Airborne</th>
<th>Special Forces Tryout</th>
<th>RASP</th>
<th>2/75 RGR</th>
<th>1-509</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toughness, discipline</td>
<td>&quot;How to Fail&quot;</td>
<td>Renewed confidence in my ability to thrive given difficult circumstances.</td>
<td>Continuous self-improvement. Holding myself to a higher standard.</td>
<td>How to be a leader</td>
</tr>
</tbody>
</table>
Figure A5

*Timeline Student Echo*

<table>
<thead>
<tr>
<th>Basic Training</th>
<th>Tech School</th>
<th>Home Station</th>
<th>Deployment to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to doarma</td>
<td>Set Knowledge</td>
<td>How AVM is used for both state and federal purposes: now reserve in the event of a natural disaster</td>
<td>How to lead others. How to work hard for long hours. How to handle being busy nonstop for weeks</td>
</tr>
</tbody>
</table>
Figure A6

Timeline Student Foxtrot

<table>
<thead>
<tr>
<th>1st Bn</th>
<th>1st BN 7th Marines</th>
<th>Weapons/FU Training Battalion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd BN</td>
<td>2nd Marines</td>
<td></td>
</tr>
<tr>
<td>3rd LAR BN</td>
<td>Mountain Warfare Training Center</td>
<td></td>
</tr>
<tr>
<td>How to Deal with Extreme Stress</td>
<td>The Difference Between Effective and Ineffective Leadership</td>
<td>The Evils of Micromangement</td>
</tr>
<tr>
<td>The Power of Effective Marketing</td>
<td>What Effective, Well Planned Training Looks Like</td>
<td>The Difference Between Training and Education</td>
</tr>
<tr>
<td>Small Streamlined Organizations are More Effective and Efficient Than Large Bureaucracies</td>
<td>The Value of Trust That Comes from Working with Someone That You Have Previous Experience With</td>
<td>The Value of Developing Working Relationships with Supporting Organizations</td>
</tr>
<tr>
<td>You Really Can Be the Best, Ever at Sometime</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure A7a

**Timeline Student Golf**

<table>
<thead>
<tr>
<th>Boot Camp</th>
<th>Ceremonial Honor Guard Washington DC</th>
<th>VAN-115 ATSUJI JAPAN</th>
<th>VRC-30 ATSUJI JAPAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>My division had a lot of nuclear teams and I realized that common sense and intelligence were two very different things I learned I am very good at retaining information that interests me.</td>
<td>where I first learned that attitudes about hard work can be different, some sailors and leadership saw more value in education &amp; self-improvement and others saw their jobs in the navy as their defining accomplishments. Also learned navy leadership has your back only when it's convenient for them and they will be recognized for it.</td>
<td>I learned how the navy advancement system worked and learned how to best teach myself material. I never used my phone at work if I had down time my time was spent with a manual in my hand learning what each part of the aircraft did. I figured out my best way to learn something is to study backwards to know the general format of a question and study like I was writing a test.</td>
<td>Advanced to E-5 in three years and started to learn other skills, did not have the same work ethic to learn and be better, Advanced to E-6 and realized I had been completely investing myself in the navy and not in my own self-improvement. Decided to start online college classes while on deployment, learned I do not learn well in online environments decided to pick a shore duty that would allow for in-person college classes.</td>
</tr>
</tbody>
</table>
Figure A7b

Timeline Student Golf Continued

Realized for sure I needed to invest
in myself because once you transfer
no one cares how many qualifications
you had it's only what you can do
for them now.
found embry Riddle hybrid classes
the best option available for
learning, teachers would give us
the work to be done and timelines
were more loose than traditional
college classes.
Saw the need for in person classes
and tutoring to match how I
learn through hands on
mentoring & tutoring
Figure A8

Timeline Student Hotel

1. Basic/tech school
   - There is a lot of rules for people who don't have self control

2. On base training
   - I really love my job and my unit

3. Annual training
   - Things still move slow once you're in and everything is more confusing

4. Initial orders
   - You have to wait a lot in the military

5. Annual job change temp due to COVID orders
   - The government wastes money on stupid things and I can benefit from that

6. In-active duty orders
   - This makes me miss active-duty but also, the guard is awesome.
Figure A9

Timeline Student Juliet

[Handwritten timeline with various events and notes]
Figure A10

*Timeline Student Lima*

<table>
<thead>
<tr>
<th>Boot Camp</th>
<th>MOS School</th>
<th>Camp Pendleton</th>
<th>Afghanistan Deployment 1</th>
<th>Camp Pendleton</th>
<th>Afghanistan Deployment 2</th>
<th>Camp Pendleton</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Learned how to follow direction</em>&lt;br&gt;<em>Learned how to pay attention to details</em></td>
<td><em>First taste of leadership.</em>&lt;br&gt;<em>Learned I was a fast learner when I'm interested. Top of my class without much effort.</em></td>
<td><em>More leadership experience.</em>&lt;br&gt;<em>Absorb information fast. Mastered new skills quickly.</em></td>
<td><em>Learned to work on small team.</em>&lt;br&gt;<em>Learned how to be resourceful.</em>&lt;br&gt;<em>Learned how to work in high stress situations.</em></td>
<td><em>Higher rank = learning how to handle more responsibilities.</em>&lt;br&gt;<em>Learned how to mentor and teach others.</em></td>
<td><em>Learned how to lead a small team.</em>&lt;br&gt;<em>Learned how to liaison and that public speaking makes me really nervous but I was still OK at it.</em>&lt;br&gt;<em>Learned that it's tough to try to be a leader and a friend at the same time.</em></td>
<td><em>Learned that I have potential that is wasted if I continue this path.</em>&lt;br&gt;<em>Learned that there isn't any real loyalty in this organization.</em></td>
</tr>
</tbody>
</table>
Figure A11

*Timeline Student Oscar*

<table>
<thead>
<tr>
<th>Boot Camp</th>
<th>A School</th>
<th>First Deployment</th>
<th>SRT-2</th>
<th>Second and Third Deployment</th>
<th>Transitioning to civilian life</th>
<th>FBI</th>
<th>WVU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having a regiment is key to sanity</td>
<td>Study. Study. Study.</td>
<td>Exploring the world brings fulfillment</td>
<td>Your team is your family</td>
<td>Know your limits. Don't sacrifice your happiness for work.</td>
<td>Never give up.</td>
<td>Take every opportunity and be proud of your past</td>
<td>Pass on your knowledge. Always continue to learn.</td>
</tr>
</tbody>
</table>
Figure A 12

*Timeline Student Tango*

<table>
<thead>
<tr>
<th>Role</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trainee</td>
<td>SEP 2014-JUN 2015</td>
</tr>
<tr>
<td>Automatic Rifleman</td>
<td>JUL 2015-MAR 2016</td>
</tr>
<tr>
<td>Assistant Gunner</td>
<td>MAR 2016- MAY 2016</td>
</tr>
<tr>
<td>Team Leader</td>
<td>MAY 2016- MAY 2018</td>
</tr>
<tr>
<td>Squad Leader</td>
<td>MAY 2018- AUG 2019</td>
</tr>
</tbody>
</table>

- Individual readiness and preparation for the unexpected
- Not everyone in a leadership role is a leader
- Communication
- Being comfortable with the unknown
- Attention to detail
- Importance of documenting/maintaining records
- Being responsible for the actions of others
- Do not expect what you do not inspect
- How to instruct, train, and develop others
- Dissecting and delegating complex tasks
- You cannot do everything yourself
Appendix B

Timeline Miracle D. Solley

Figure B

*Timeline Miracle D. Solley*

<table>
<thead>
<tr>
<th>ELT school</th>
<th>6K</th>
<th>10th</th>
<th>11th</th>
<th>12th</th>
<th>Still</th>
<th>Daughter</th>
<th>Wynn</th>
</tr>
</thead>
<tbody>
<tr>
<td>won't live</td>
<td>OK</td>
<td>4.05</td>
<td>3.75</td>
<td>3.00</td>
<td>now</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C

Interview Questions For Student Veterans

1. What made you decide to leave the service?
2. What made you decide to go to college?
3. Why did you decide to major in engineering?
4. Can you tell me about a positive, negative and noteworthy experience you had in college?

The following questions may be used to probe further the experiences relayed in question four.

5. How do you define being successful in college?
6. Can you tell me about experiences in college when you felt successful.
7. What life experiences allowed you to be successful in those cases?
8. What challenges have you faced in college?
9. How did you approach those challenges?
10. What life experiences allowed you to overcome those challenges?
11. What do you find stressful about college?
12. What do you do to help manage those stressful situations?
13. What support network do you use when you face challenges?
14. How do you manage your time to meet deadlines?
15. Do you feel comfortable working on team projects?
16. What roles do you prefer when working on team projects?
17. What resources do you use at WVU to help you be successful?
18. What additional resources would you like to see at WVU to help you succeed?
19. What are your career goals?

20. How is college preparing you to meet those goals?

21. Have any of your life experiences prepared you to meet those goals?
Appendix D

Interview Questions For Professors

1. What experiences have you had with student veterans (positive, negative, noteworthy)?

2. Have student veterans been active participants in your classes?

3. How do student veterans in your class interact with non-student veterans?

The following questions may be used to probe further the experiences revealed in the first three questions.

4. Have student veterans met deadlines in your classes.

5. How have student veterans performed in leadership roles on team projects in your classes?

6. How have student veterans performed differently in your classes compared to non-student veterans?

7. How have undergraduate students performed differently than graduate students in your classroom?