Work-in-Progress: Examining Engineering Community and Identity in FYE Pathways: Case Study of Two Veterans' Experiences

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Abstract

This Work-in-Progress (WIP) paper is a case study of two veteran students in different engineering programs who just completed a first-year engineering (FYE) experience. These experiences provide a unique context for students to establish engineering communities and establish their engineering identities. Yet, little is known about how these different experiences affect veterans. This WIP is a case study of two veteran students who are participants in a larger research project. Our analysis is guided by Wenger's Communities of Practice framework and Gee's identity framework. The two students in this case study are Jacob and Malcolm. Jacob is a transfer student pursuing a computer engineering degree through a Post General Education (PGE) FYE pathway. Malcolm is a transfer student pursuing a computer science degree through a pre-major common FYE pathway. Preliminary results indicate that Jacob and Malcolm have some similar identity traits, and they engage with similar communities in college despite the difference in their FYE experiences.

Introduction

FYE classes are often the foundation of engineering students education [1]. For many students, they set the ground for the first experience with course materials and with fellow engineering students [2]. Institutions in the United States have different engineering programs, many programs have a common curriculum that all engineering students are required to take during the first year of study, while other programs have discipline-specific approaches to FYE [3]. FYE matriculation approaches [4] and FYE course content [5] also vary significantly across institutions. Further complicating the FYE pathways, transfer students may experience FYE in their second or third year of overall study. To design better FYE experiences, it is important for the engineering education research community to systematically examine the impacts that different FYE designs have on students' pathways into and through engineering.

This WIP is part of a larger study that posits that different FYE paths that students take influence their engineering identity and their engineering communities [6]. In this paper, we focus on veterans as a case of non-traditional FYE students. A 2014 systematic review of veterans in higher education identified cases where veterans outperformed their civilian counterparts as well as cases where there was no significant difference in academic performance [7]. This WIP describes the experiences of two veterans, who's pseudonyms are Jacob and Malcolm, that come from two different FYE pathways. We focus on relating how Jacob and Malcolm are experiencing engineering after serving in the military and examining the similarities between their experiences in the context of understanding how FYE programs and courses affect veterans' experience in engineering.

Our work is guided by Wenger's approach to Communities of Practice [8][9], an extension of Situated Learning by Lave and Wenger [10]. This framework is about the social theory of learning and how the communities of practice evolve around people's affinities. An important aspect of these frameworks is the identity component which is linked to the second framework we used. Gee's [11] four perspectives on how to view identity (Nature Identity, Institutional Identity, Discourse Identity, and Affinity Identity) guided our work. Nature Identity is an identity given to a person by nature for instance being a redhead or dark-eyed. Institutional Identity is an

identity given by the institution, such as being a soldier, a doctor, or a student. Discourse Identity is a personal trait that only exists when recognized by other individuals such us being a charming or an outgoing person. Affinity Identity is an identity formed when being part of a group with people who share similar interests such as a veteran club, a reading book club, or a fan club.

Methodology

For the larger project, we conducted a total of 26 interviews with second-year undergraduate students in order to understand their engineering identity and engineering community formation. The interviews were conducted following approved IRB procedures, semi-structured, open-ended in nature, and audio-recorded for later transcription. Every interview session included one participant, one interviewer, and one note taker. Participants received a $25 gift card for their participation. Among the 26 participants there were two veterans: Jacob from Institute 1 located in a rural area in the Southern United States and Malcolm from Institute 2 located in an urban area in the Midwestern United States.

For all participants, there was a set of 6 primary questions followed by a few individual specific questions. The primary questions were designed to elicit conversation about participants' engineering identity (e.g., "Who are you?" and "Are you an engineer?"), and participants' engineering community (e.g., "What kinds of groups did you associate with during your first year?"). Specific questions were created based on the participants' recruitment survey responses. Jacob's specific questions include: "Why did you decide to join the army?" and "Can you walk me through your journey from when you left the army until now?" Malcolm's specific questions include: "Can you tell me how you got to institute 2?" and "How does being a veteran and non-traditional student affect your community in your first year?"

Results

Both students are veterans but also transfer students. Jacob spent seven years in the military, and he is now enrolled in an institute where engineering students matriculate directly into degree programs. As a transfer student, Jacob enrolled in his FYE course after completing general education requirements, the equivalent of two years of courses, at another institution. Freshmen and transfer students are combined in the same section of the course at Institution 1 in his particular major.

Malcolm served in the military for five years and then joined a community college for two semesters where he took math classes. He transferred to Institute 2 and where took all his FYE courses. Institute 2 has a FYE matriculation pattern, which means that students enroll in a common FYE program for all engineering majors, and upon completion of the program, students matriculate into an engineering discipline.

Similarities in Identities:

Both participants mentioned their military ties when we asked them about their identity through the "who are you?" question. These identity statements were coded as General Identity since they did not fall within Gee's identities perceptions. For example, they said:

> "*My name is Jacob. I'm a veteran*" [Jacob]

> "*I'm a transfer student. I spent five years in the Marines*" [Malcolm]

When sharing their stories, we noticed how both participants knowingly differentiate between two identities, one for the military and one for the civil life:

"*I'm going out to dinner. I'm going to drink with my friends. I'm hanging out playing board games. I am Malcolm. A phone call comes in and I see it's an office number and I say, "This is [Rank Name]." I had two different personalities One is Malcolm, one is [Rank Name]*". [Malcolm]

"*If they know me from class or work and they kind of just see me like a pretty easy going person, not too crazy. I just do my stuff, pretty friendly. People that knew me from the Army days would say I was really serious and not to be messed with. But they all saw me as someone that got stuff done and was always working*" [Jacob]

Similarities in the First-Year Communities:

Both participants talked about the veteran people in their campus and how they got help and support when needed from their veteran fellows, Malcolm talked about the veterans lounge while Jacob talked about the veteran students on campus.

"*Because I actually didn't realize how many other veterans I'd meet there, but there was a lot of them that I had classes with. So we'd all share stories and we could tell our military jokes that no one else got and thought we were stupid, we'd tell. So it was great. … I actually met three or four other veterans through that. And that was kind of nice. And we did a lot of research projects and stuff through that. It helped us get back in that mindset of "I have a job to do" and not just going to school.*" [Jacob]

"*I know I had some other little tips from other veteran students who were saying, "Oh, try this and here's a way to think about it." Or "If you have trouble memorizing this little, here's a cheat sheet versus memorizing stuff." You know, stuff like that.*" [Malcolm]

Similarities in Challenges:

Both participants expressed how they struggled with time management and scheduling their days, how to separate between school and private life. They had forgotten that in college it is not an 8 to 5 day, and homework and projects might affect their schedules.

"*Overall, I'd have to say time management. This was all that we have going on*" [Jacob]

"*Scheduling I think is the biggest thing. And I'm still working through that. I have a schedule, I have a wife, I can't like, go home at five o'clock and be like "Hi honey I got to go do homework. Bye honey." And I not see my wife for the entire semester.*" [Malcolm]

Conclusion

The results of our initial analyses indicate that these veterans have some shared experiences in their first year regardless of matriculation patterns, which we attribute to their shared history. They also have similar struggles; both still strongly identify with the military while trying to adapt to civilian life. As we examine the impact that FYE courses have on students' identities and communities, we may find that the first-year design has more impact on veterans as they have different experiences and expectations than traditional path students.

In the next phase of interviews, we will hopefully interact with both Jacob and Malcolm again to get a deeper understanding of their stories and get additional information about their identities and community development as they progress through their engineering degree pathways. We will see if the similarities in their stories persist or begin to diverge, how well they adapted to civilian life, and how they are affected by the design of FYE courses.

Acknowledgements

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