

Special Session: Taking a Deep Dive: Qualitative Methods and Identity

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Abstract—This special session will engage participants in how to apply multiple qualitative research methods to explore the experiences of students, particularly marginalized populations. Throughout the session, we will use our insights and experiences from our collaborative research on student veterans in engineering as an example. The session focuses on using multiple data collection methods (interviews and focus groups) across several institutions. We introduce and discuss the key event timeline and identity circle as qualitative research tools that can be used to answer important questions in engineering education for veterans and other understudied populations. We emphasize the importance of partnerships in such research. Benefits and challenges associated with data collection, synthesis, and analysis, across multiple research sites will be discussed.

Keywords—military veterans; qualitative methods; underrepresentation

I. INTRODUCTION AND RATIONALE FOR SESSION

Innovative qualitative research methods are needed for eliciting deeper insights into the unique experiences of specific populations such as student veterans in engineering (SVEs). Given that the numbers of veterans going to college are increasing and that student veterans often bring valuable assets for engineering such as skills in teamwork, communication, and leadership, there is growing interest in encouraging more veterans to pursue engineering and understanding their experiences. We have been conducting a multiyear multi-institution collaborative study of the experiences of SVEs. We address the advantages of interdisciplinarity for enriching research design and analysis. This session responds to prior scholarship that advocates for the use of qualitative and mixed methods in engineering education research [1 - 3]. We build upon other workshops and sessions we have offered to help participants learn about using qualitative methods to elicit stories from underrepresented populations [4, 5].

II. GOALS OF THE SESSION

At the end of the session, participants will be able to:

- Describe the key event timeline and identity circle as research tools to facilitate in-depth interviews and gather information on participants' life journeys
- Describe several advantages and limitations of qualitative methods in engineering education research.

- Explain some challenges in researching student veterans in engineering.
- Describe some unique characteristics and assets that student veterans bring to the engineering classroom.

III. INTENDED AUDIENCE

This session would be accessible to any FIE attendee. It would be particularly valuable for those interested in researching student experiences using qualitative research methods. We use the case of military student veterans in engineering to highlight a unique population that brings leadership and technical skills to the classroom. Those interested in exploring other special populations in engineering education might also find these methods helpful in eliciting narratives of students from marginalized populations who may be reluctant to share.

IV. CONTEXT

Research on student veterans in engineering education is increasingly emerging, with particular attention focused on themes of leadership, technical skills that translate to engineering capabilities, and the complex pathways and transitions that lead them to pursue higher education using government sources of funding (e.g. Forever GI Bill) [5-13]. Significant variability exists among and within veteran groups given different military experiences, military branch, years of experience, type of job in military, whether or not they faced combat, and post-military health. While quantitative methods about student veterans offer broad information about some of these differences in experience, qualitative methods offer data to deepen our understandings of how their experiences vary at the individual level of analysis. Our research has focused on how military experiences shape SVEs engineering education experiences, how SVEs choose to major in engineering, and their engineering education experiences [14, 15]. In addition, we have explored the intersections of the identities of first generation SVEs [16] and women SVEs [17] and the impact of military leadership training on SVEs educational experiences [18].

Our research team faced a unique challenge in that none of us are military veterans although some of us are military-connected through family. Therefore, we established partnerships with others with lived experience in the military

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and scholarly expertise on student veteran experiences. For example, we formed an external advisory board (EAB) including a board member of the national Student Veterans of America (SVA), a retired Major General of the US Marine Corps, a retired Marine Corps officer whose military responsibilities had included Voluntary Education Programs, Transition Assistance Programs, and Career Counseling, a student veteran in engineering, a researcher on military families, and an engineering professor who works with veterans and veteran programs. The EAB members provided guidance, resources, and iterative feedback that was critically important to our research.

V. INTERACTION

The facilitators are an interdisciplinary team including an engineering professor and a sociology professor who are experienced with active learning techniques. Together, they have facilitated many workshops and interactive sessions, producing a learning environment that facilitates difficult dialogues about inequities in engineering education. The facilitators will help attendees from various backgrounds feel comfortable and the special session will include hands-on activities for participants to learn about techniques for researching student veterans and other underrepresented populations in engineering.

VI. SESSION OVERVIEW

We will share with session participants our experiences in conducting a qualitative research study of student veterans in engineering, highlighting our best practices, as well as challenges and how these were addressed.

Our tentative agenda is

Time	Topic
10 min	Active Introduction Demonstrating a Visual Technique
10 min	Goals, Quantitative vs Qualitative Methods
5 min	Interviewer Subjectivity and Importance of Partnerships
10 min	Exploring Student Veteran Engineering Identity
10 min	Activity: Visually Exploring Variation: Why students leave engineering
10 min	Examples: student veteran identity
15 min	Interview Strategies including Key Event Timeline and Identity Circle
10 min	Think-Pair-Share: Participants' research questions and interviews
10 min	Discussion and Questions

It can be difficult to adequately capture the wide range of challenges and opportunities that nontraditional populations face in higher education. We offer examples of the nuances of engaging such populations in research endeavors given that they may only be present in small numbers [c.f. 19]. We share several techniques that we developed to tap into SVE narratives and reveal aspects of identity that might not emerge using more traditional methods. As this special session will demonstrate, these methods allow respondents to construct

their own narratives and challenge possible stereotypes. This qualitative approach can help researchers move away from stereotypes, for example, shift the lens from a deficit-based to an asset-based framework.

VII. EXPECTED OUTCOMES

Participants will come away with the capacity to incorporate advanced techniques for researching marginalized populations such as military veterans. Continued discussions regarding research design and methodology and sharing best practices and insights are critical toward advancing our shared mission of diversifying engineering education and enhancing research and translation to practice. This session contributes toward expanding the use of qualitative approaches across multiple research sites to examine issues in engineering education and adoption of asset-based frameworks for studying students in engineering.

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