

Play, Practice and Perform: The Pathway to Becoming and Belonging as an Engineer

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Abstract : Despite over 40 years of research into why women choose not to enroll or leave undergraduate engineering programs, along with the subsequent and serious efforts to attract more women, women receiving bachelor's degrees in engineering in the US have remained disappointingly low. We know that even despite their struggles to become more welcoming and inclusive, engineering programs remain gendered, raced and classed. However, our research team has found that women who participate and indeed thrive in undergraduate engineering project teams do so in numbers that far exceed their participation in undergraduate programs. We believe part of the answer lies in the ways that project teams facilitate experiential learning, specifically providing opportunities for members to play, practice and perform. We employ a multi-case study method and assume a feminist, activist and interpretive perspective. We seek to generate concrete and context-dependent knowledge in order to explore potentially new variables and hypotheses. Our focus is to learn from those select women who are thriving. For this oral or e-poster presentation, we will focus on the results of the second of our semi-structured interviews – the learning journey interview. During this interview, we ask participants to tell us the story/ies of their participation in project teams. Our results suggest these women find joy in their experience of developing and applying engineering expertise. They experience this joy and develop their expertise in the highly patterned progression of play, practice and performance. Play is a purposeful activity in which someone enters an imaginary world, a world not yet real to them. However, this imaginary world is still very much connected to the real world, in this case, a particular kind of engineering, in that the ways of engaging are already established, codified and rule-governed. As such, these women are novices motivated to join a community of actors. Practice, better understood as practices, a count noun, is an embodied, materially interconnected collection of actions organized around the shared understandings of that community of actors. Those shared understandings reveal a social order – a particular field of engineering. No longer novices, these women begin to develop and display their emergent identities as engineers. Perform is activity meant either to demonstrate competence and/or to enable, even teach play and practice to others. As performers, these women participants become models for others. They direct play and practice, contextualizing both within a field of engineering and the specific aims of the project team community. By playing, practicing and performing engineering, women claim their identities as engineers and, equally important, have those identities acknowledged by team members. If we hope to transform our gendered, raced, classed institutions, we need to learn more about women who thrive within those institutions. We need to learn more about their processes of becoming and belonging as engineers. Our research presentation begins with a description of project teams and our multi-case study method. We then offer detailed descriptions of play, practice, and performance using the voices of women in project teams.

Keywords : engineering education, gender, identity, project teams

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