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Teaching the math of traditionally feminine domains: a case study with group theory and quilting

The typical, default contexts for examples in mathematics classrooms fall within traditionally masculine domains (e.g. sports, building, cars), while students express surprise when faced with contexts traditionally labelled as feminine (e.g. sewing, childcare) in their math classes, if they ever come up at all. This imbalance and our tendency to immediately think of masculine contexts has an impact on the development of mathematical identity among female students, potentially hindering their engagement in and pursuit of math. To address this issue, this talk will explore a novel pedagogical approach: a Community Engaged Learning partnership between an undergraduate group theory course and the York Heritage Quilters Guild. This initiative aims to illuminate the rich mathematical underpinnings of textiles, specifically leveraging the principles of symmetry and pattern generation inherent in quilting to illustrate core concepts in group theory. The talk will detail the design and implementation of this partnership, preliminary findings on its impact on student engagement and conceptual understanding and discuss the broader implications for diversifying mathematical experiences and fostering a more inclusive mathematical community.