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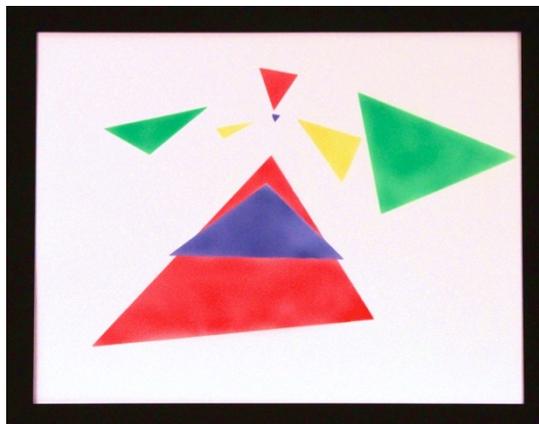
Mathematical Practices and Arts Integration in an Activity-Based Projective Geometry Course

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It is a general assumption that the mathematical activity of students in school should, at least to some degree, parallel the practices of professional mathematicians (Brown, Collins, Duguid, 1989; Moschkovich, 2013). This assumption is reflected in the Common Core State Standards (CCSSI, 2010) and National Council of Teachers of Mathematics (NCTM, 2000) standards documents. However, the practices included in these standards documents, while developed to reflect the practices of professional mathematicians, may be idealized versions of what mathematicians actually do (Moschkovich, 2013). This might lead us to question then: “What is it that mathematicians do, and what practices are not being represented in the standards documents?”

In general, the creative work of mathematicians is absent from the standards and, in turn, from school mathematics curricula, much to the dismay of some mathematicians and researchers (Lockhart, 2009; Rogers, 1999). As a result, creativity is not typically being fostered in mathematics students. As a response to this lack of focus on fostering creativity (in each of the science, technology, engineering, and mathematics disciplines – the STEM disciplines), a movement to integrate the arts emerged. This movement, called the STEAM movement – introducing the letter A into the acronym STEM to signify incorporating the arts – has been gaining momentum, yet limited research has been carried out on the efficacy of integrating the arts into mathematics courses.

My experiences as the co-instructor for an activity-based course focused on projective geometry, and that included an arts integration component, led me to consider the course as a setting for investigating both mathematical practices and arts integration. In this work, I explored the mathematical practices in which students engaged while working to develop an understanding of projective geometry through group activities. Furthermore, I explored the way in which students’ learning experiences were enriched through artistic engagement in the course. In this talk, I discuss *mathematical play* and *acts of imagination* – two mathematical practices in which students engaged, and which emerged from the classroom data. In addition, I discuss particular ways in which artistic engagement, including creating two mathematically inspired artistic pieces, enriched students’ learning experiences – including artistic engagement fostering mathematical play, providing opportunities to make sense of pop-up topics, and contributing to students’ notions of connections between mathematics and art.



Perspective from a Point