Mathematics And Art as A Bridge To STEAM Community Projects

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Abstract

In this presentation we describe the philosophy behind projects that have come to life from a collaboration between the Mathematics Department at Rockhurst University, the Greenelease Gallery on our campus, as well as schools, university students, and community members in the Kansas City Metropolitan Area. We strive to create sustainable and integrative active learning by combining activities in mathematics and art that produce high levels of engagement and cognitive stimulation. Starting by engaging individuals in mathematics through play, we weave ideas through other disciplines coming together for expression in an individual art piece. All pieces are created with the intention of contributing to a community whole. They come together and are celebrated in a public community exhibit at our gallery. Two examples of these projects are discussed. The first one resulted in an exhibition called *Visualizing Math: A Pathway to Art and Creative Design* based on workshops in which participants practiced "posing theorems like a mathematician" using the game of *Tantrix*, and designed their own pieces to play on the gallery's walls. The second example, *Tiling for Change*, is a project in which individuals learn about mathematical tilings through tiling puzzles, they reflect on their responsibilities as individuals in society and their ability to direct social change. In this project participants are creating "person and heart" tiles representing themselves and their goals for changes in the world based on an octagon square-semiregular tiling which will be exhibited as part of a two-sided window tapestry.

Keywords: Community learning, Mathematical play, Mathematics outreach, Outreach, STEAM