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Teaching rigid motions through embodied activities: Making the jump from 2- to 3- dimensions.

While embodied activities can have many positive impacts on students' mathematical learning, the fact that embodied activities often occur in 3-dimensional space and involve elapsed time can introduce unexpected levels of complexity to the mathematics being studied. In this talk we describe an activity that uses dancing and figure skating to teach rigid motion transformations (task adapted from Leonard and Bannister, 2018). We describe how participants, at both the middle school and university level, enacted translations, rotations, and reflections in ways that caused them to experience difficulty differentiating between reflections and rotations. By enacting the reflection as a pre-image, a motion, and an image, they saw every reflection as entailing a rotation. We conclude that enacting rigid motion transformations introduced an additional level of complexity; students needed to learn to differentiate the process of the transformation which they saw as a 3-dimensional activity from the result of the transformation which can be imagined as a 2-dimensional mapping. (Received September 25, 2018)