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(Dis)orientation and spatial sense: topological thinking in the middle grades.

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Summary: We focus on topological approaches to space and we argue that experiences with topology allow middle school students to develop a more robust understanding of orientation and dimension. We frame our argument in terms of the phenomenological literature on perception and corporeal space. We discuss findings from a quasi-experimental study engaging 9 grades 5–8 students (10–13 years old) in a 6-week series of school-based workshops focused on knot theory. We discuss video data that shows how students engage with the intrinsic disorientation of mathematical knots through the use of gesture and movement.

Classification: G93 G23 C53

Keywords: body; geometry; knots; orientation; phenomenology; topology; gesture; movement

[http://www.pna.es/Numeros2/pdf/Freitas2014PNA9\(1\)Dis\)orientation.pdf](http://www.pna.es/Numeros2/pdf/Freitas2014PNA9(1)Dis)orientation.pdf)