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

Ubuz, Behiye (ed.) et al., CERME 8. Proceedings of the eighth congress of the European Society of Research in Mathematics Education, Antalya, Turkey, February 6–10, 2013. Ankara: Middle East Technical University (ISBN 978-975-429-315-9). 615-624 (2013).

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 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 C53

*Keywords:* spatial sense; topology; corporeal space; embodiment; knots