

1067-L1-1430

Megan J Wawro* (megan.wawro@gmail.com), 6475 Alvarado Road, Suite 206, San Diego, CA 92120-5013, and **Michelle Zandieh** (zandii@asu.edu). *Detailing an Innovative, Student-Centered Instructional Sequence that Builds from Students' Intuitive Understandings of Vector to Formal Definitions of Span and Linear Dependence.*

We present an innovative instructional sequence for an introductory linear algebra course that supports students' reinvention of the concepts of span, linear dependence, and linear independence. The problem setting of the instructional sequence, known as The Magic Carpet Ride Problem, builds from students' previous mathematical and life experiences. Through this, the course begins by focusing on vectors and vector equations, their algebraic and geometric representations, and properties of sets of vectors. Furthermore, during students' own process of developing understanding of the objects of linear algebra (namely, vectors and vector equations), they see-for themselves-a need for powerful and efficient solution techniques, such as Gaussian elimination. Finally, we repeatedly see evidence of how powerful a metaphor the Magic Carpet Ride problem is for students throughout the duration of the semester. During the presentation we will: a) present the instructional sequence and samples of student work; b) discuss how this sequence fosters the development of formal ways of reasoning about the objects of linear algebra and intellectual need for sophisticated solution techniques; and c) exemplify the power of this sequence as students encounter new content during the semester. (Received September 21, 2010)