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**Jeffrey L. Stuart\*** ([jeffrey.stuart@plu.edu](mailto:jeffrey.stuart@plu.edu)), Mathematics Department, Pacific Lutheran University, Tacoma, WA 98447. *Specific Examples, Generic Elements and Restricted Dimensions - Overcoming Student Roadblocks in Linear Algebra.*

Linear algebra is often the first math course in which sets play an explicit and fundamental role. Consequently students typically struggle with writing proofs for set-based results.

In this talk, I focus on three key strategies to improve student success.

1. Emphasize the role of *specific (fully specified) examples* as examples to highlight definitions, and, more importantly, as counterexamples to universal statements.
2. Emphasize what a *generic element* from a set is, how to write one, and what role it plays in proofs about sets.
3. Emphasize the different and noninterchangeable roles of specific examples and generic elements.
4. Thoughtfully tune the sizes of vectors and matrices in problems to focus students on the primary idea at hand. Specifically, use small shapes to encourage students to populate objects and to free students from dealing with the technical complications of large shapes. In contrast, use large shapes to discourage students from employing an entrywise approach, and from populating specific entries in an object.

These key strategies will be illuminated by a discussion about spans. (Received September 15, 2015)