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Jim Cottrill* (jfcottr@math.ilstu.edu), Department of Mathematics, Campus Box 4520, Normal, IL 61790-4520, and **Aaron Montgomery** (MontgoAa@cwu.EDU). *Tool or Topic: Student Perceptions of Matrices in Linear Algebra.*

This report deals with a general theme: how students perceive the role of the matrix when solving a variety of problems in linear algebra. The study was designed to collect data covering the topics of matrix operations, vector spaces, linear independence of sets of vectors, solving systems of equations, and linear transformations. Interviews were conducted using tasks for the students to solve along with follow-up questions to probe the depth of their understanding. In some cases, the student's initial response to the problem was to set up a matrix. This reaction was questioned in many of the cases, and it is clear that some students were using an appropriate (to them) tool and that others were using a matrix "because we always do." This talk will attempt to address the following questions. Was there a difference in performance between the group of "tool users" and the group of "action repeaters" in this study? What might be the meaning when a student states "a vector space is a matrix?" Finally, are there other constructions that the tool users made that may be used to help our students understand the nature of the matrix in linear algebra? (Received October 02, 2000)