Virginia Tech’s Math Emporium is a 500-work station advanced learning community in mathematics which is staffed by faculty, teaching assistants and undergraduate peer tutors who provide one-to-one assistance in over 20 courses. Since it opened in 1997, the emporium has served as a site for advancing technology-assisted approaches to teaching and learning, with continuous assessment of student performance and of faculty roles and attitudes. In developing a course for the emporium, math faculty often choose from existing texts, software and tutorials to develop an appropriate approach to technology-assisted instruction. In contrast, Linear Algebra was the first course in the emporium that was totally redesigned by the math faculty, from text to tutorials to quizzes and tests.

Virginia Tech’s redesign of its Linear Algebra course replaces the 40-student multiple section model with one large course structure. A Web-based resource system (interactive tutorials, computation examples, an electronic textbook, and online quizzes) increases student feedback and allows 24 x 7 access to course materials. Redesign has reduced the cost-per-student from $77 to $24, resulting in a projected annual operating cost savings of $97,400. These faculty resources have been re-directed to advanced mathematics courses where smaller, more intimate student-faculty interaction is a requirement. The math department is using information technology to deploy their instructional resources both strategically and differentially rather than taking a one-size-fits-all approach to course design. The university received a Pew Course Transformation grant early in the redesign process. In addition, the University of Idaho and the University of Alabama are replicating the basic design of the Math Emporium with very different student populations, also with assistance from the Pew redesign project.

This update will describe aspects of daily life for over 7,000 students per semester and approximately 60 faculty who form the Math Emporium’s learning community. In addition to providing an historical overview of costs and other administrative issues, there will be a case analysis of the Linear Algebra course, including descriptions of the web-based resources being used; of students’ grades, persistence, and retention rates over time; of outcomes on common time exams and analysis of examination items; of students’ perceptions of the emporium; and of faculty challenges.