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This paper reports on an innovative approach to teaching Calculus I, which has been shown to significantly improve Calculus I grades and success in Calculus II for students in the treatment group. The most salient aspect of the reform was the inclusion of oral assessments prior to every written examination. In orals, facilitators worked with 5 students in small classrooms asking them to articulate their conceptual understanding of topics which would be included on upcoming written exams. Analyses showed that the treatment students in this study did significantly better than the control group on a common final exam, as well as on the conceptual and procedural sub-sections of that final. The most dramatic effects were seen for students at-risk of failing Calculus I. Treatment students did 1 1/2 standard deviations better than their control counterparts. These at-risk treatment students also took and passed Calculus II at significantly higher rates. Oral assessments have now been introduced into all large lecture Calculus I classes with promising results. Answer tree analyses show orals to be significant predictors of higher written test grades for most ability levels. (Received September 06, 2007)