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**Su, King-Dow; Lee, Ming-Quey**

**An implementation for integrating multimedia technology into mathematics: collage students' performance of optimized differentiation and limit learning in Taiwan.**

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Summary: The purpose of this article is to investigate students' performance of using multimedia technology within mathematical differentiation and limit fields. Two groups of undergraduates participated in the process of this study and evaluation. The experimental group was taught with the abundant multimedia supplementary materials, including conceptual computer Flash animations, Mathematica static figures, power point bulletin and e-plus software computer-based instructions. The control group was taught as usual, using a regular mathematical textbook. After eight weeks of learning, and the statistical procedures of the analysis covariance, it was found that the students of experimental group outperformed their counterparts in their mathematical learning efficiency; they would get the 12.0% and 11.6% raises in differentiation and limit respectively. The Cronbach alpha for the entire learning attitude questionnaire was 0.94. There were significant differences ( $p < 0.05$ ) of the learning attitude questionnaire with students' different fondness degree of multimedia technology.

*Classification:* C75 D45 I15 R25 U75

*Keywords:* multimedia technology; differentiation; limits; flash animations; learning attitude questionnaire; undergraduate students; computer algebra; computers in the mathematics classroom

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