1135-J5-150 **Samer Habre*** (shabre@lau.edu.lb), Beirut, Lebanon, **Iman Osta**, Beirut, Lebanon, and **Hana Shatila**, Beirut, Lebanon. *Students' Conceptual Understanding of Derivatives in Freshmen Calculus.*

This study examines students' conceptual understanding of derivatives in a calculus I course offered at a private Lebanese university. Two groups are considered: a control group learning derivatives with an emphasis on the symbolic approach of the concept, and an experimental group where the emphasis is on multiple- representations. In the experimental group, cooperative learning, technology, and a series of activities incorporating the APOS (action- process, object- schema) levels were integrated in the teaching and learning of derivatives. Data were collected using qualitative and quantitative methods. Results show that students in the experimental group have an object conception and an almost comprehensive understanding of the derivative, particularly concerning the slope of a tangent line at a point, the instantaneous rate of change, and the relation between a function and its derivative. Students in the control group however have deficiencies in their understanding, showing only action and process conceptions of the derivative. Quantitatively, results show significant statistical differences in the mean scores between the two groups in favor of the experimental group. (Received August 04, 2017)