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iMPaCT-Math is a project where a team of university researchers and math teachers are developing a set of learning modules for use in a high-school algebra classrooms. These modules provide an experiential-visual context for students to make connections across multiple representations: (a) statements in a program, (b) computational process; (c) graphical output, and (d) underlying mathematical concepts such as slope and Cartesian coordinates. The activities are designed to foster mathematical thinking and conceptual depth. Most activities utilize summation within simple programs that can be executed on graphing calculators like TI-83. These programs, and their corresponding graphical outputs, enable students to discover their own math and logic errors in a manner that encourages further investigation or reflection. In this presentation, we will illustrate how writing/modifying simple programs involving “while” loops and anticipating the graphical outputs can reinforce students’ understanding of slope and why a constant second difference will cause the graph to curve. Information about our project is available at <http://www.impactstem.org>. (Received September 08, 2013)