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In this talk we will present an analysis of the results of the use of a set activities we have designed to teach matrix multiplication and its links with matrix functions. The analysis,uses APOS Theory as theoretical framework and covers results obtained by three groups of students taking an introductory course in Linear Algebra. Students modeled a problem, dealing with pesticide consumption by plants and animals, which motivates and gives meaning to matrix multiplication. Additional activities were designed based on a genetic decomposition to help students to construct the link of matrix multiplication with functions. We later evaluate the effectiveness of this approach, and explain the main difficulties encountered by students in terms of the theoretical framework. (Received September 20, 2016)