

Surveying Mathematics Departments to Identify Characteristics of Successful Programs in College Calculus

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Abstract:

This report describes results of a process to develop a suite of instruments to assess calculus instruction at universities and colleges across the nation. The instruments were developed as part of a national study of the Mathematical Association of America to identify characteristics of successful programs in college calculus. The report will focus on the development of the student pre- post-surveys to illustrate the development process. We describe the theoretical framework consisting of a broad taxonomy of primary variables that guided the development of these surveys. We then describe the research we conducted to develop and validate specific survey items to assure that they assess the intended taxonomy variables and are consistently interpreted. This report contributes knowledge of the primary variables that affect success in calculus and insights into the processes involved in survey design and validation.

Key words: calculus, survey design, instrument validation