

HOW TO REDESIGN A DEVELOPMENTAL MATH PROGRAM BY USING THE EMPORIUM MODEL

Introduction

From working with large numbers of students, faculty, and institutions since 1999, the National Center for Academic Transformation (NCAT) has learned what works and what does not work in improving student achievement in both developmental and college-level mathematics. The pedagogical techniques leading to greater student success are equally applicable to both developmental and college-level mathematics. The underlying principle is simple: Students learn math by doing math, not by listening to someone talk about doing math. Interactive computer software combined with personalized, on-demand assistance and mandatory student participation is the key element of success. NCAT calls this model for success the Emporium Model, named after what the model's originator, Virginia Tech, called its initial course redesign.

This how-to guide is designed for those of you who want to improve learning and reduce costs in developmental math and use NCAT's Emporium Model to do it. The guide makes two basic assumptions:

- We assume that your developmental math program faces some kind of academic problem such as poor student performance, poor completion rates, an inordinate amount of time for students to get through the developmental math sequence, and a lack of consistency in developmental math courses, leading to poor performance in college-level courses. You may also face a number of financial problems such as budget cuts, the need to serve more students on your current resource base, and difficulty in finding qualified faculty both full-time and adjunct.
- We also assume that you have heard about the Emporium Model and its spectacular track record of proven success. A summary of the outcomes achieved in improving student learning, increasing student completion, and reducing instruction costs can be found on the NCAT website.

NCAT has received national and international recognition of its course redesign work. Most recently, NCAT was awarded a \$2.2-million grant from the Bill & Melinda Gates Foundation to conduct the largest-ever effort to remake developmental math courses using technology. That program, which we called *Changing the Equation*, involved the redesign of 114 courses at 38 institutions and affected more than 120,000 students annually. You will see references to the participating institutions from that program, as well as others that conducted successful redesigns in developmental math, throughout this guide.

This guide focuses on redesigning the entire developmental math *sequence* rather than a single course. Another NCAT guide describes how to redesign a *single* math course at both the developmental and college levels. While there is substantial overlap between the two guides, there are also substantial differences.

We at NCAT could not have produced this guide by ourselves. It represents a compendium of the good ideas created and actions taken by hundreds of faculty and administrators working on this issue since 1999. In particular, we would like to thank the original six NCAT Redesign

Scholars in mathematics who have both worked tirelessly to create and sustain the Emporium Model and consistently given us and others throughout the United States great advice over the past decade: Betty Frost, Jackson State Community College (retired); Jamie Glass, University of Alabama; Phoebe Rouse, Louisiana State University; John Squires, Chattanooga State Community College; Kirk Trigsted, University of Idaho; and Karen Wyrick, Cleveland State Community College. We would also like to thank the following colleagues who graciously took the time to review this guide, assuring us where we went right and correcting us where we went wrong: Susan Barbitta, Guilford Technical Community College; Megan Bradley, Frostburg State University; Betty Frost, Jackson State Community College (retired); John Harwood, Penn State University; Ron Henry, Georgia State University (retired); Crystal Ingle, Northwest-Shoals Community College; LaRonda Lowery, Robeson Community College; Eric Matsuoka, Leeward Community College; Teresa Overton, Northern Virginia Community College; and John Squires, Chattanooga State Community College. This guide is also a product of the experiences of thousands of students who once dreaded the thought of taking a math class but now say, "I can do it!"

In the coming pages, we will tell you how to replicate this success.