

Resources and Reform: Thinking Through the Costs of a Developmental Math Redesign

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**CCRC's ASDER (Analysis of Statewide
Developmental Education Reform) Project**

**What college resources
are required to implement
a statewide redesign of
developmental
mathematics?**

CCRC's ASDER project examines statewide developmental education reforms in North Carolina and Virginia.

Data for this presentation are drawn from interviews with faculty, administrators, and staff at 6 Virginia community colleges during the second semester of implementation (fall 2012) of a statewide redesign of developmental mathematics.

Virginia's Developmental Mathematics Redesign

- Developmental math courses restructured into **nine 1-credit modules**
- New **customized diagnostic assessment** places students into individual modules
- Modularized curricula delivered primarily by **computer-mediated instruction**; lecture-based courses available at some colleges
- Colleges packaged content via **one-credit courses** or **variable-credit shell courses**

Virginia's Developmental Mathematics Redesign

One-credit course (MTE)

- Course is tied to a specific module
- Students enroll in a one-credit four-week course
- Offered either as a computer-mediated or lecture-based course

Variable-credit shell course (MTT)

- Course includes students enrolled in multiple modules
- Students enroll in up to 4 credits, depending on how many modules they need; course may span full semester
- Best suited for computer-mediated instruction

What are the most significant **direct** reform costs borne by colleges implementing the math redesign?

Reallocated Academic Faculty

Math implementation leads report spending 25–50% of their time planning and overseeing early implementation of the redesign.

Additional or Diverted Administration

Senior administrators at colleges offering 4-week courses report dedicating additional time to preparing course schedules and staffing the increased number of sections.

Additional or Diverted Administration

Administrative staff report spending substantially more time enrolling students and re-enrolling those students who do not complete modules in the appointed time.*

**One-credit MTE courses require additional registration periods throughout the semester. Students who do not complete a module may need to drop the subsequent course and re-enroll in the same module before the next four-week cycle begins.*

New Facilities and Equipment

Most colleges using computer-mediated instruction made infrastructure upgrades.

One college invested \$250,000 in new developmental mathematics classrooms equipped with computers.

What are the most significant **indirect** reform costs borne by colleges implementing the math redesign?

Lower Per-Course Enrollments

Low course enrollment (e.g., fewer than 10 students in a section) results from offering one-credit MTE courses at various time slots across the semester as well as from low (and unpredictable) demand.

Time-Intensive Advisement

Advisors report it takes more time to explain the course structure to students and to help students enroll in appropriate modules.

Longer Placement Exam

Overall, it takes students about twice as long to complete the customized diagnostic placement exam, compared with the previous placement instrument.

Lower Developmental Math Enrollment

The redesign intentionally reduces some students' remedial math requirements, thus decreasing developmental math student enrollments and the associated FTE funding.

What **impact** do resource requirements have on reform implementation?

Resource limitations affect decisions on how to deliver instruction.

Administrators at one college expressed a preference for a computer-mediated approach; however, up-front costs of creating computer classrooms contributed to the decision to deliver the modules through lecture courses.

Many colleges employed shell courses because the administrative burden of enrolling students was perceived to be too great for one-credit MTE courses, despite faculty's preference for them.

Resource limitations also generate creative solutions to implementation challenges.

To maximize its investment and to encourage students to use a new developmental math lab, one college introduced course requirements that are completed outside of class time in the lab.

One college co-enrolled multiple one-credit MTE levels per course to maximize course enrollments and simplify scheduling for students.

Some colleges programmed SIS software to automate grade uploads, decreasing the administrative workload for faculty and departmental staff.

What should policymakers
keep in mind when
planning for **large-scale**
instructional reform?

**Implementation diverts
resources from other college
functions and may impact
ongoing initiatives.**

High up-front staffing and facilities costs may require compromises that can undermine implementation efforts.

**Indirect costs are often
unanticipated and invisible
and therefore difficult to
account for in planning.**

Policymakers must assess how the proposed reform's direct and indirect costs may affect implementation.

Policymakers should work with colleges to plan for resource requirements across reform preparation, early implementation, and refinement.

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