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

<table>
<thead>
<tr>
<th>One-credit course (MTE)</th>
<th>Variable-credit shell course (MTT)</th>
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<tbody>
<tr>
<td>• Course is tied to a specific module</td>
<td>• Course includes students enrolled in multiple modules</td>
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<td>• Students enroll in a one-credit four-week course</td>
<td>• Students enroll in up to 4 credits, depending on how many modules they need; course may span full semester</td>
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<td>• Offered either as a computer-mediated or lecture-based course</td>
<td>• Best suited for computer-mediated instruction</td>
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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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