Transitional Math
The Next Frontier in Developmental Math Reform

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Life transitions

- Former college math faculty
- Participated in many reform efforts, including pathways
- Worked at state and national levels
- New position in IL to support new legislation scale-up
- Working on doctorate
- Changing perspective on placement
The problem

• Large percentage of high school students taking developmental math because they are not college ready

• Why?
  • Students skip 4th year of math (not required in IL)
  • Placement tests often underplace students
  • Many students are not ready for the rigors and expectations of college

• What the high schools want: placement based on grades

• What the colleges want: rigor, prepared students
Solving the problem

Developmental math reforms

- Emporiums
- Corequisites
- Multiple measures placement

Change structures or systems

<table>
<thead>
<tr>
<th>Developmental math pathways</th>
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<tbody>
<tr>
<td>- Math Literacy</td>
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<td>- Quantway</td>
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<td>- Statway</td>
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<td>- DC Foundations</td>
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Change content
Transitional (or transitions) courses

• Content delivered to high school seniors who are at risk of being placed into developmental courses; smooth transition to college.

• Can be for math, reading, or writing.

• Students may receive placement at a college or have placement determined with a college based on some agreement.
How TM fits in with other reforms

Transitional math aligns with and supports other reforms to have a comprehensive approach to help students be successful in college-level courses.

**High School**
- HS students

**Developmental Level**
- Adult students
- Students not ready for one intense semester of math

**College Level**
- Adult students
- Students ready for one intense semester of math
Transitional courses nationally

CCRC conducted a nationwide scan of transitional (or transitions) courses. Offered in 39 states, up from 29 states in 2012-13. Usually done at the local level instead of statewide. 17 states changing focus to statewide implementations.

### Table 1.
Scan Results: Implementation Scope and Subjects Offered

<table>
<thead>
<tr>
<th>State</th>
<th>Scope of Implementation</th>
<th>Subjects Offered</th>
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<tbody>
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<td>District of Columbia</td>
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<td><strong>TOTAL</strong></td>
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<td><strong>22</strong></td>
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* State: Indicates that there is a state initiative to offer this intervention across a state, which includes oversight from a state agency.
* Local: Indicates that this intervention is offered in specific schools using locally developed approaches, without oversight by a state agency.
* In Progress: Indicates that preparatory activities are underway to implement an intervention.
* See Barnett et al. (2015).
How the Illinois approach differs

The Illinois approach is not as simple as some state’s efforts but it has the potential for greater buy-in and effectiveness

- Multiple **pathways** instead of a one-size-fits-all course
- Emphasis on **contextualized content** aligned to careers, not just algebra
- Not using a statewide curricula or text
- Equal **partnerships** between HS and CC to build trust and relationships
- Using **multiple measures** of placement
- Not funded with a large grant but being resourceful with a variety of funding sources
Illinois at a glance

1. Over 700 high schools - 3 years of required math
2. 48 community colleges within 39 community college districts
3. Local control state
4. Unionized faculty at HS and CC levels
5. Two-year budget stalemate which has led to reduced enrollment
6. Many initiatives to reduce remediation but nothing at scale

Moral: If you can do it in Illinois, you can do it anywhere.
1. On average, 50% of IL HS graduates are placed into remedial education (Source: IL report card). 4th year math and placement tests play a role.

2. Fewer than 40% of CC students complete any type of degree or certificate within six years (Source: Bailey, 2015). Remediation plays a role. Individuals without a degree or certificate have dramatically reduced earning potential (Source: Belfield and Bailey, 2017).

3. By 2020, 65% of all jobs in the economy will require postsecondary education and training beyond high school (Source: Georgetown University study, 2018).
Student Progression Through the Developmental Math Sequence

11% Passed Introductory College-Level Math

Did not enroll in next course

- 13% Continued to Intro College-Level Math
- 4% Continued to High-Level Remedial Math
- 7% Continued to Mid-Level Remedial Math
- 15% Began Taking Remedial Math
- 26% Referred to 3+ Levels of Remedial Math

Did not pass or complete course

- 21%
- 2%
Postsecondary and Workforce Readiness Act (PWR Act)

Public Act 99-0674 (HB 5729); signed by Governor on 7/29/16

1. Postsecondary and Career Expectations (PaCE)
2. Pilot of Competency-based High School Graduation Requirements
3. College and Career Pathway Endorsements on High School Diplomas
4. Transitional Math Courses
   • 4th year high school math courses designed to smooth transition to college and reduce remediation rates
   • Not dual credit or AP courses
   • Not for college credit
TM approach to reduce remediation & increase completion

Determine who is not college-ready for math in the junior year.

Remediate with new transitional courses in the senior year.

Provide guaranteed placement at all IL community colleges and some universities.

**Result:** Students start at college-level coursework, increasing their chances of completing a certificate or degree.

This initiative is about more than completing a class, but instead a degree or certificate.
Key points to PWR transitional math

Beyond the **whys**, there are many other key facets.

**Who:** seniors who have met or are meeting state graduation requirement

**When:** placement granted for 18 months; transcripted at HS level

**What:** portable course based on meta-major (one year or one semester); placement based on grade

**Where:** at HS from HS teachers; dual credit qualifications do not apply; flexibility provided
Rethinking the senior year of math

- Algebra varies with pathway
- Contextualization throughout
- Default is QL Pathway
Making TM happen:
A different approach to high school partnerships

Keys to success: communication and trust
Benefits of transitional math

For high schools:
- Increase equity and access
- Improve chances of college completion

For colleges:
- Fewer students in dev ed, more students in college math
- Increased completion rates
- May increase college enrollment
- Can help a college’s budget

For both:
Build relationships and alignment between K-12 and colleges
Thoughts?
Comprehensive approach to implementation

Leadership & policy

Curriculum & resources

Communication & outreach

Professional development & training

Implementation & scaling

Sample units
- OER materials (curated and created)

Webinars
- Summits
- F2F & online training

Website
- Newsletter
- Monthly webinars
- Support for schools

Competencies & policies
- Portability
- Work with state agencies

Data collection system (in planning)
- Monitoring scale
Factors critical to transitional math success

MOU establishing expectations that have been agreed upon by HS and CC

Training and ongoing support for teachers, including a CC liaison

Comprehensive advising approach

Evaluation and improvement of courses over time

Working relationship between HS and CC and between faculty and administrators
College classes need students who can:

• Read and think critically
• Use mathematical skills
• Use technology
• Solve problems with words
A new experience – doing math

A doctor orders dicloxacillin sodium 125 mg p.o. q.6.h. for a child who weighs 55 lb. The recommended dosage of dicloxacillin sodium for children weighing less than 40 kg is 12.5 to 25 mg/kg/day p.o. in equally divided doses q.6.h for moderate to severe infections. Is the dosage safe?

Abbreviation definitions
p.o. – medication is taken orally
q.6.h. – frequency of medication taken (every 6 hours in this case)

Teaching approach: start with a task, address skills just in time, focus on problem solving

Emphasize complex problems, not complex procedures
Competencies

- Competencies are broad learning goals that illustrate how a student can integrate and apply skills in context for a domain
- Key performance indicators (KPI’s) are more like standards
  - Emphasize higher elements of Bloom’s taxonomy

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Summits: Efficient way to start process

• Format:
  ▪ 3 hours with HS and CC teams
  ▪ Gets everyone acquainted and up to speed
  ▪ Individual support for high schools
  ▪ MOU discussion

• Led summits for 32 of 39 CC districts
• Remaining 7 will be held this fall or next spring
Portability process: Ensuring rigor, engaging faculty

Portability beyond local colleges when courses meet statewide criteria

Policies
Competencies
Grading standards that adhere to statewide policies (testing, grades, etc.)

- At least 25% of the overall grade must come from problem or project-based learning tasks.
- A single assessment may not be more than 50% of the final grade in the course.
- No more than 25% of the course grade can come from formative assignments such as homework.
# Scaling Transitional Math

Colleges or high schools implementing, or planning to implement TM

<table>
<thead>
<tr>
<th>Community College Districts</th>
<th>Public High schools</th>
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<tbody>
<tr>
<td>2017: 31 out of 39 (79%)</td>
<td>2017: 95 out of 721 (13%)</td>
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<tr>
<td>2018: 32 out of 39 (82%)</td>
<td>2018: 171 out of 721 (24%)</td>
</tr>
<tr>
<td>2019: 39 out of 39 (100%)</td>
<td>2019: 278 out of 721 (39%)</td>
</tr>
</tbody>
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Statewide scaling over next 3 – 4 years

**Goal:** 100% of public high schools and community colleges

**NOTE:** All high schools are opted in by the law by default. Schools can opt out through their school boards provided they meet the law’s requirements to do so.
More data will be collected at the state level. But pilots are promising:

**College of Lake County** (pass rates of QL TM course with a grade done over a year)
- HS 1: 16/29 (55%)
- HS 2: 18/29 (62%)
- TOTAL: 34/58 (58.6%)

**Harper College** (TM course is in STEM track)
In the initial years they tracked students who had taken the senior math course AND then came to Harper AND took a college-level course at Harper (Stats, Quant Lit or College Alg)

260/360 ≈ 72.2% got a C or better in that Harper class (this percentage for Harper students has historically been 48-52%)

**McHenry County College** (7 years of implementing STEM)
57% of entering freshmen needing remediation to 11%
Key takeaways

- Bottom-up reform can still come with top-down mandates
- Collaboration and partnerships are paramount
- There can never be too much communication or professional development
- Organization and leadership is necessary
- TM does not compete with, but instead supports other reform efforts, particularly completion
- Start working with high schools so you can be a part of the process
Questions?
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