

Best Practices for Developmental Math Programs

To assist Illinois community colleges improve their developmental math programs, the following best practices have been selected from existing sources and organized into one comprehensive document. Principles for the program as a whole, as well as specific components, have been included. Programs encompassing this comprehensive structure serve all students according to their needs, goals, and changes therein.

As a college considers this document, they should aspire to include one or more traits from each area listed: guiding principles, placement, advising, courses, instruction, and support. For each of these broad categories, there are several examples to assist schools. The list of examples is not a checklist but instead a starting point for discussion. Additionally, there is at least one case study for each category to show how some of the ideas were implemented at a college.

Schools are encouraged to embody the spirit of the document but tailor the specific options to suit their students and faculty while considering resources available. **Therefore, items listed are suggestions and not mandates.**

Guiding principles for any developmental math program

- Institute high levels of organization for the program in terms of consistent content, pace, instruction, and expectations.
- Establish program assessment measures that are used and evaluated regularly to gauge program effectiveness and possible areas of improvement.
- Assess persistence, retention, and performance of students in subsequent courses. Use results to improve the program.
- Create structures and support for adjunct faculty such as materials, training, mentoring, and professional development.

Goals for each facet of the developmental math program

- **Placement:** Refine testing, placement and administrative procedures to ensure that students enroll in the developmental courses [and/or programs] they need.
- **Advising:** Assist students to enter and succeed in the courses and programs that best meet their needs.
- **Courses:** Improve and diversify course offerings to support diverse ability levels, learning styles, and goals.
- **Instruction:** Provide quality instruction that fosters student engagement and learning.
- **Support:** Establish multiple and varied means to support students through the program.

Placement

Goal: Refine testing, placement and administrative procedures to ensure that students enroll in the developmental courses [and/or programs] they need.

Ideas:

- Establish mandatory testing and placement policies that have enough flexibility to allow for changes in goals and skills.
- Provide sound options and policies for bypassing courses and requirements when needed.
- Articulate the assessment instruments to be used and policies for placement and routing to assist testing centers.
- Set cut score standards and validate them regularly to ensure accuracy of placement.
- If possible within time and budget constraints, use multiple measures for placement such as school records, interviews, writing samples, portfolios, recommendations, etc.
- Use placement tools that also have diagnostic and remediation abilities so that they can serve a valuable function in determining what services students need for success in math.
- Reduce the length of time before a student can start college courses to accelerate the remediation process. A system using more accurate assessment that identifies the specific needs of students and focuses instruction on addressing those particular needs is one way to minimize the time a student spends in remediation.

Case Studies:

[Missouri Southern State University](#), MO

MyMathTest for refresher to improve placement

[Montgomery College](#), MD

FastTrack classes to bypass courses

[University of Illinois](#), IL

ALEKS for refresher to improve placement

Advising

Goal: Assist students to enter and succeed in the courses and programs that best meet their needs.

Ideas:

- Enhance advising through use of a “road map” – a structure of guided sequential steps.
- Create a position to coordinate advisement.
 - Revise registration policies and procedures to include advising.
 - Ensure that all First-Time-In-College students are advised.
 - Require advising for all developmental students until they have attained 30 credits.
- Train division and faculty advisors to use a more holistic approach in advising students. This could also include professional development that addresses diversity issues, especially the advisement of students of color, low-income students, and first generation students.
- Create an early warning system for students at high risk of failure. This can include weekly academic progress reports in selected courses, accompanied by frequent check-ins between at-risk students and their teacher or counselor.
- Create an advising database to track students who receive advising and/or follow up with students who drop out of developmental or gatekeeper courses.
- Develop a case-management system of advising for the highest risk students. Some colleges are assigning Success Coaches to at-risk students.
- Review and improve policies regarding online advisement.

Case Studies:

[North Carolina State College](#), NC
Developmental math advising

Courses

Goal: Improve and diversify course offerings to support diverse ability levels, learning styles, and goals.

Ideas:

- Rethink assessment and content, focusing on what students need in order to be successful in college rather than simply concentrating on placement within the sequence of a curriculum.
- Establish learning competencies.
- Move away from the one-size-fits-all model of developmental math.
 - Faster and slower courses for varying learning speeds
 - Traditional and reform courses for varying learner interests & goals
- Offer alternative instructional formats in developmental math (traditional and individualized), and place students in the appropriate class based on a learning styles test.
- Offer a short, intensive review/refresher course, such as a bridge course, to help students with low test scores to enter the developmental sequence at a higher level.
- Offer an “extended semester” math option, which stretches two developmental math courses over three semesters.
- In addition to the lecture model, include at least one other course delivery mode such as online, self-paced, or computer assisted/hybrid.
- Focus on depth over breadth when developing and aligning curriculum.
- To increase more time on new concepts, consider continuation sequences of courses where one course begins where the previous one ends. Use technology, such as online homework systems, to refresh skills as needed.
- Align courses within the developmental sequence and with college level courses.
- Articulate course content, coverage, and goals for all instructors teaching them.

Case Studies:

[Cleveland State](#), TN

Hybrid courses

[Quinsigamond Community College](#), MA

Variety in course offerings

[Rock Valley College](#), IL

Modular algebra, accelerated options

Instruction

Goal: Provide quality instruction that fosters student engagement and learning.

Ideas:

- Reduce class size in developmental math sections.
- Increase the use of active learning strategies.
- Use spiral learning approaches to continually remind students of previous knowledge.
- Use online homework systems to fill in skill gaps and develop skills in an individual way.
- Focus on teaching students how to study, how to be successful, and how to learn mathematics (done within each course or as learning communities).
- Strive to meet individual learning needs of students.
- Offer supplemental instruction, tutoring, or study groups.
- Incorporate technology when appropriate.
- Institute high levels of organization for the developmental math program in terms of consistent content, pace, instruction, and expectations.
- Ensure pacing is built for the developmental student and allows time to process and absorb new content.
- Provide high quality, varied means of assessment.
- Convene broad-based forums to study ways to increase student-faculty interaction.
- Assess student attitudes toward math.
- Increase faculty knowledge of best practices in developmental education through participation in national organizations and conferences.
- Support adjunct faculty and faculty new to teaching developmental math through training, materials, and professional development.
- Provide sufficient funding and support on a regular basis to support professional development for both full time and adjunct faculty.

Case Studies:

[Quinsigamond Community College](#), MA

Standardized policies, online homework

[Rock Valley College](#), IL

Standardized policies (listed in link), online homework

[Valencia Community College](#), FL

Supplemental instruction, learning communities

Support

Goal: Establish multiple and varied means to support students through the program.

Ideas:

- Assess and align academic and student support programs.
- Improve admissions, registration, financial aid, and other student services.
- Redefine and expand the role of counselors.
- Expand and improve an existing mentoring program. Train mentors and pay them a stipend.
- Develop mentoring and support programs targeted at specific populations: e.g., men of color, Hispanic students.
- Develop a list of all available services, and operate an information center with trained staff and extended hours.
- Provide a variety of services to help ABE and ESL students make the transition to credit courses, including financial aid workshops, peer mentoring, and bridge classes.
- Expect regular office hours for all instructors including adjunct instructors.
- Create a walk-in math lab.
- Offer free tutoring services, including tutoring by students and staff who are trained.
- Hire and train supplemental instruction leaders to assist with reading and math.
- Research supplemental instruction models for developmental education, including diagnostic software. Create supplemental modules to complement courses.
- Establish and staff a testing center, and offer workshops in test taking.
- Improve communication about the availability of the learning assistance and testing center.
- Establish a "one-stop learning center" for advising and tutoring.

Case Studies:

[Ohlone College](#), CA

Math lab and resource center

[Rock Valley College](#), IL

Math lab with computers and faculty tutors

Resources

Electronic:

[Achieving the Dream](#)

[National Council for Academic Transformation](#)

[American Mathematical Association of Two-Year Colleges](#)

[Illinois Mathematical Association of Community Colleges](#)

Print:

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