

Chapter 1

Making an IMPACT *Generating the Ripple Effect*

You think you're just a drop in the ocean...
but look at the ripple effect one drop can make!
~Anonymous

When asked why they have chosen teaching as a career, faculty will often say it is because they want to have an IMPACT on students and their future. Have you, however, pondered over how you IMPACT your students? Consider the following

- A one-semester course with 30 students that meets three times a week for fifteen weeks is equivalent to 1,350 opportunities to IMPACT students.
- With these opportunities, in each semester, when teaching three classes, you will have 4,050 chances to IMPACT students.
- In a two-semester academic year, you will have 8,100 opportunities to IMPACT student success.

Now, that's IMPACT!

YOU have a tremendous IMPACT on shaping mathematics education in first two years of college!

YOU have a tremendous IMPACT on the mathematical literacy of a large number of students!

YOU have a tremendous IMPACT on the quantitative capacity of workers in workplace!

The intent of this document is to support your efforts to make a positive, meaningful, and long-lasting IMPACT! It is through the stories of students like Ana that we can see the positive effect a teacher makes in the lives of students.

Ana started her higher education path at a community college, with the intent to transfer to a university. After her first semester, she applied for a work-study position as a student aide for a math faculty member. He had a kind disposition and he ran his classes and interactions with his students in such a fashion that Ana could tell that his first priority was student success. This often meant addressing the anxiety that comes from struggling in mathematics. While Ana and other students attended his office hours, the instructor watched how well Ana tutored the other students and how much she enjoyed it. Before long, he walked her to the tutoring center and told the manager that

he had to hire her. She spent hours helping students with their math at every level, from basic mathematics through calculus. The most common comment she heard was that she explained the topics so well that the students wished Ana was their teacher. After a year of peer tutoring, with encouragement from the math instructors at her school, Ana decided to become a teacher. She switched her major from psychology to mathematics, transferred to the University, and after a few years, a couple of kids and a marriage, she earned her Bachelor of Science in Mathematics and began teaching as an adjunct faculty member at the community college she had attended as a student. Again, with encouragement from her colleagues to get a master's degree, she completed an intensive one-year master's program in Teaching and Teacher Education. She applied for a full-time position the year she graduated with her master's degree and she has been teaching full-time at the community college where it all started.

Now Ana has the opportunity to similarly impact her students. If she had not been encouraged by the faculty at her community college, she might never have found her passion to teach mathematics.

Addressing Societal Changes

Teaching mathematics in the twenty-first century brings new opportunities and challenges to the mathematics community, especially in the first two years of college. Compared with previous generations, today's college students are "... more pragmatic. They say their primary reason for going to college is to get training and skills that will lead to a job, and let them make money" (Levine, 2012, para. 6). These students are immersed in an age of rapidly changing technology. The internet has been their social platform for commerce, inquiry, media engagements, and digital play. Yet, are today's students critical inquirers? Do they know how to research the internet while checking the credibility, reliability, and validity of information? Information on the internet, whether truth or fiction, provides the opportunity for students to be exposed to more diversity and global issues than any generation before them. This changing technology also increases the number of high-tech jobs for which training in these positions requires mathematical competency. It is critical that colleges create a mathematics learning environment that will captivate students' interest. The environment must empower them mathematically to succeed in a vast array of life opportunities.

As our society continues to change and evolve, so must our approach to teaching mathematics in the first two years of college. By building upon AMATYC's historic standards documents *Crossroads in Mathematics: Standards for Introductory College Mathematics before Calculus* (AMATYC, 1995) and *Beyond Crossroads: Implementing Mathematics Standards in the First Two Years of College* (AMATYC, 2006), the organization continues its legacy and leadership within the professional mathematics community with the release of this document. Both *Crossroads in Mathematics* and *Beyond Crossroads* form a solid foundation for the introduction of the four pillars of PROWESS in *IMPACT: Improving Mathematical Prowess And College Teaching*. These two sets of foundational standards undergird and permeate these pillars as well as the various chapters in this document.

PROWESS in Mathematics

The word “prowess” references extraordinary ability as well as distinguished bravery. AMATYC has created four pillars of PROWESS as an innovative way to enhance our students’ mathematical ability and bravery through recommendations for continuous improvement of college teaching in the first two years of college. These pillars are

PR	proficiency
OW	ownership
E	engagement
SS	student success

As a result of focusing on these four pillars, AMATYC intends to foster mathematical PROWESS in all students by:

- Presenting multiple instructional approaches that will build mathematical proficiency as well as student ownership of learning (Chapters 3 and 4).
- Providing guidance to faculty to design and implement instructional programs that foster mathematical prowess in students (Chapters 3, 4, 5, and 6).
- Sharing successful models of redesigned mathematics curricula that will revitalize faculty and departments to engage in meaningful conversations as well as implement evidence-based strategies, courses, and programs (Chapters 7 and 8).
- Informing policy makers and legislators of the needs and challenges ahead for students and institutions and subsequently helping to implement policies that will lead to student success (Chapters 7 and 8).

AMATYC seeks to provide guidelines to inspire and challenge you and other stakeholders to take action to develop PROWESS in students. Every component in mathematics education (such as instruction, curricula, and assessment) as well as those who make decisions that affect the teaching and learning of the discipline (such as faculty, departments, institutions, policy makers), should focus on PROWESS. The impact will be *a ripple effect of change in mathematics learning environments* (as depicted in the cover graphic). Whether you are a faculty member, an administrator, or a policymaker, you can have an impact on student success in the first two years of college mathematics for thousands of students. Would you join AMATYC in broadening your impact by implementing this renewed vision for **Improving Mathematical Prowess And College Teaching?**

References

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- American Mathematical Association of Two-Year Colleges. (1995). *Crossroads in mathematics: Standards for introductory college mathematics before calculus*. Cohen, D. (Ed.). Memphis, TN: Author.
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- Levine, A. (2012, November 4). Digital natives and their customs. *New York Times*. Retrieved May 17, 2017, from <http://www.nytimes.com/2012/11/04/education/edlife/arthur-levine-discusses-the-new-generation-of-college-students.html>