

# Chapter 9

## IMPACTing the Future

### *Answering the Call*

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Never doubt that a small group of thoughtful, committed  
citizens can change the world  
~ Margaret Mead (Lutkehaus, 2008, p. 261).

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As instructors, we hope to make an impact on our students' future. Whereas classrooms are instrumental to the creation of a community of students, national organizations have an ability to create a community of instructors. This document was developed and written by college mathematics faculty and administrators for faculty who teach mathematics in the first two years of college. Building on AMATYC's two historical standards documents, *IMPACT* was designed to inspire educators to improve mathematics instruction by developing PROWESS (Proficiency, Ownership, Engagement, Student Success) in their students and to assist instructors to view themselves as a key part of an extended educational community. We hope *IMPACT* encourages fruitful conversation and productive dialogue on how to create an environment of learning that is supported by research.

This document does not only introduce the concept of the four pillars of PROWESS, but also the importance of the role of stakeholders and of research specifically targeted for mathematics education in the first two years of college. We summarize key themes in the following tables:

# Making an IMPACT on Mathematical PROWESS

**Proficiency:***Developing Students' Mathematical Knowledge*

Irrespective of a student's academic pursuits, mathematical proficiency is critical to being a functioning member of society. Students need to: know mathematics procedures, execute core computations fluently, view mathematics as relevant to their daily lives, demonstrate mathematical understanding, utilize the structure in the mathematics to solve problems, apply mathematics to everyday situations, and communicate mathematically.

**Ownership:***Taking Responsibility and Showing Initiative*

Faculty should work towards empowering students to take ownership of their learning by promoting self-regulated learning. For faculty, ownership involves being a reflective practitioner who examines curricula and teaching practices to identify areas that need improvement. For departments and institutions, ownership requires supporting faculty in their teaching.

**Engagement:***Developing Intellectual Curiosity and Motivation in Learning Mathematics*

Engaging students intellectually in the process of learning mathematics through active and cognitive activities is fundamental for improving student achievement. Likewise, engaging faculty in the pursuit of excellence in teaching through innovative best practices results in an invigorated commitment to teaching and innovation, which benefits students, the department, the college, and society as a whole.

**Student Success:***Stimulating Student Achievement in Mathematics*

Stimulating student success requires the entire college community to work together to advise and place students into appropriate pathways while creating a positive learning environment to maximize their success. Producing and sustaining a learning environment that promotes student success should be implemented by utilizing a collaborative spirit that unites college leadership, faculty, staff, and policy makers.

*Table 1: Making an Impact on Mathematical PROWESS*

# Advancing the IMPACT

## Continuing the Ripple:

### *Bringing the Community Together to Accomplish Change*

Making meaningful change involves multiple stakeholders working together. Such changes are not easy but examples of different institutions and groups working to influence the types of changes that this document advocates demonstrate what is possible.

## Implications for Research:

### *Moving the Research Agenda Forward in Mathematics in the Two-Year College*

Research in mathematics education at the two-year college is emerging as a vital field of inquiry for understanding the complexities of teaching and learning mathematics at this level. The two-year college setting is a fertile environment for research and faculty at all levels are encouraged to engage in research investigations that meet the needs of both students and faculty. While ample research has been conducted in universities and K-12 settings, minimal research has been focused on two-year colleges.

Table 2: Advancing the IMPACT

Two-year colleges face unique challenges as they teach a diverse student population, many of whom are not prepared for college-level mathematics courses. This document contains more than merely a list of recommendations for making an impact. It is a document that can be used for professional growth as well as a framework to make significant changes at the individual, departmental, and college levels.

What are your next steps to have an impact on your students and professional environment? We encourage you to use and cite *IMPACT* as a reference to bring inspiration and to move mathematics education forward. Share the document with your colleagues so you may join in the movement to create the ripple effect. Here is a non-exhaustive list of ways to bring this document to life:

- *Try something different in your classes.* It may work well or it may not work as well, but it informs you on how your teaching practices can change. Remember that creative teaching is a process—when you learned to factor or integrate, you did not get every problem correct the first time around either! **Proficiency** is built on conceptual understanding, application of knowledge, and perseverance.
- *Have a book reading at department meetings.* Discuss different sections of the document at each meeting and brainstorm ways to implement recommendations on your campus. Your college will take **ownership** of the curricular and pedagogical ideas presented here and can discuss how to help students have ownership of their learning.
- *Present at a conference, whether your ideas worked or not.* If you are incorporating some of the ideas in this document, share with colleagues. Whether you do this on a local, state, or national level, others may be interested to know what you are doing that is innovative and is making a difference. Your **engagement** will be infectious.

- *Share this document and its ideas with your college administration.* Deans, provosts, and college presidents are receptive of ways to improve **student success** in mathematics. Highlight for your administration areas that will help you grow student success at your college.

While reading this document, you viewed many stories from students and faculty. We hope you identified with these vignettes and now are inspired to impact the lives of students. Consider your answers to the following thought-provoking questions:

- Are you an experienced mathematics instructor who has honed your craft over time? What have you seen over your years in the classroom that has changed?
- Are you just a few years removed from graduate school and at the start of your teaching career? Do you find yourself in agreement with others in your department or are you finding a need for change?
- In what way can the information in this document be useful to improve your teaching and foster change while maintaining mathematical rigor?
- Are you an administrator looking for ways to improve success rates in developmental mathematics courses? Is your college too worried about having college-ready students instead of being a student-ready college?

No matter where you are in your career, IMPACT Live! affords you the opportunity to contribute to, or benefit from, the collective ideas and resources of the AMATYC community. As the online extension of *IMPACT*, IMPACT Live! allows us to expand our community and share our ideas. Head to [AMATYC.org/IMPACTLive](http://AMATYC.org/IMPACTLive) and find innovations your colleagues are using or contribute innovations and ideas of your own.

**Share your story. Make an IMPACT!**

## References

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Lutkehaus, N. C. (2008). *Margaret Mead: The making of an American icon*. Princeton, NJ: Princeton University Press.