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# 01. Introduction

Mary B. O'Neill  
*Hamilton College*

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# Introduction

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Hamilton College

## 1 Introduction

This Handbook, incorporating the contributions of many colleagues, is intended to be a resource for Quantitative and Mathematics Support Center (QMaSC) directors and staff, whether they are heading an existing program, starting a program, or updating a program. Directors and administrators who wish to establish support centers that represent the mission of their institutions will find examples of successful practices, including planning an inviting space, hiring staff and tutors, managing budgets, working with the campus community, incorporating technology, developing assessment practices, and coordinating with stakeholders.

QMaSCs exist in some form at many U.S. colleges and universities, and are pivotal for student retention for majors within the Science, Technology, Engineering and Mathematics (STEM) pipeline, such as physics, mathematics and engineering. But QMaSCs can also support courses with quantitative content within the core curriculum outside of the STEM field. Many colleges and universities administer Quantitative Literacy and Quantitative Reasoning programs aimed at assessing and building the quantitative skills of all of their students. Traditional support uses tutoring, review sessions, and workshops. Advances in technology have added to the types of support a QMaSC can offer.

Each of the sections below provides a short summary of each chapter appearing in that part of this Handbook.

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## 2 Leadership and Management

Because a flourishing QMaSC depends on successful leadership and management, our Handbook devotes its first section to that topic. Gail Hilyard explains why proper strategic planning and management are needed to establish the goals and objectives of center services. Ja'Wanda Grant points out that the placement of a QMaSC in the institution's hierarchy clarifies the importance of that support. Ibrahim Rosic reveals how an institution can address diversity to help various groups of students achieve their academic goals. Maria Belk gives a concise and thorough explanation of how important it is to keep up-to-date with computers and technology for administrative tasks and to enhance student learning. In her chapter on effective management, Rosalie Tepper suggests that finding a balance between setting and enforcing expectations while supporting center staff is crucial for a successful program. Recognizing that many students have math anxiety, Gail Hilyard details how institutions can help students overcome this barrier to success.

## 3 Community Interactions

Community interactions are of vital importance to the success of a QMaSC, from coordinating with administration to establishing a virtual presence on campus. Frederick Van Swearingen begins this part of the Handbook by discussing the value of coordinating services with other academic support groups on campus, keeping in mind relationships and structures within the institution. Laurie Wern explains how to develop a learning community that is welcoming and threat-free, by having center staff constantly update and review the center's promotional and informational material. Matthew Salomone and Kathryn Bjorge emphasize the importance of establishing dialogue with faculty that will lead to more effective teaching in quantitative and math courses. Eric Gaze continues in this vein by discussing methods for collaborating with faculty about the ways services are provided to varied campus populations. McKayla Nuffer concludes the Community Interactions part by stressing the importance of a virtual presence using technology in the form of websites and social media to publicize a QMaSC's services.

## 4 Staffing, Hiring, and Training

Using each institution's established resources for staffing, hiring, and training, a QMaSC must look to its mission and needs in order to find and hire administrative staff and to hire qualified tutors and mentors. Christine Tinsley gives an overview of the hiring of administrative staff and tutors in a university setting, which can include graduate students as tutors. Jonathan Nelson discusses tutoring practices and methods that a director of a QMaSC should address when hiring

undergraduate tutors. Cymra Haskell outlines specific examples of the art and practice of tutoring, showing how tutors learn from their experiences.

## 5 Center Assessment

Internal and external assessment are similar in that data must be collected to determine how well a QMaSC is meeting the needs of its constituencies. In this section, Tiana Bosley describes tools used in obtaining data to make management decisions, to improve a center's program, and to highlight best practices. Dennis Lewandowski continues the discussion of assessment by explaining how having a system in place to gather information from center staff helps to assess how goals are accomplished and where improvement may be needed. Rachel Dunwell, Grace Coulombe, and Michael Schuckers stress the importance of developing the appropriate assessment tools to develop materials for the creation of an internal review, a necessary component, for outside review panels and for institutional accreditation.

## 6 Starting a Center

When an institution establishes a new QMaSC or updates an existing center, many issues come into play, including the design of center space, the definitions of the roles of center staff, and the hiring of the center director. George Recck emphasizes the importance of an appropriate job description in hiring the right person to lead the center. Darry Andrews and Carolyn Johns discuss how the size and mission of the institution affect staff roles and duties. Eileen Phillips explores ways of planning or updating a QMaSC space. She shows that success of a center depends on how it is set up, and where it is located, demonstrating a commitment by the institution to this kind of academic support.

## 7 Case Studies

From private four-year colleges and universities to public universities and community colleges, the methods of supporting students and faculty in STEM fields and beyond can be quite different. In this part of the handbook, authors from across this spectrum of institutions describe their respective QMaSCs. The goal for each QMaSC is always the same — to give students the best experience possible. The ten case study authors describe how their QMaSCs have addressed the topics discussed in the rest of this Handbook. A director or QMaSC staff member will see how these particular institutions have handled issues of leadership and management; community interactions; staffing, hiring, and training; assessment; and starting or updating a center. The individual authors

write about their own institutions, adding commentary on special features unique to their own colleges or universities.

## **8 The Future**

The editors of this Handbook seek to bring to light the many and varied aspects of running a QMaSC. This document is meant to start a conversation about QMaSCs. We hope it has answered some questions about leading a QMaSc and that it may prompt new questions leading to a continued discussion of what makes a functional and successful QMaSC.