

The Charles A. Dana Center
at the University of Texas at Austin

in collaboration with

The Texas Association of Community Colleges

2014

THE **New Mathways** PROJECT

Implementation Guide

For colleges implementing mathematics
pathways based on the NMP model



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For a free download or to order a bound print copy of this book, go to
http://www.utdanacenter.org/nmp/implementation_guide

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Introduction

The New Mathways Project . . .

. . . is a systemic approach to improving student success and completion through implementation of processes, strategies, and structures based on four fundamental principles.

The Principles of the New Mathways Project (NMP) Model

1. Multiple mathematics pathways with relevant and challenging content aligned to specific fields of study
2. Acceleration that allows students to complete a college-level math course more quickly than in the traditional developmental math sequence
3. Intentional use of strategies to help students develop skills as learners
4. Curriculum design and pedagogy based on proven practice

The NMP in Texas

The New Mathways Project is being developed as a statewide reform effort through a unique joint enterprise between the Charles A. Dana Center and the Texas Association of Community Colleges (TACC). In 2012, the presidents and chancellors of all 50 Texas community college systems agreed to support this collaboration, which calls for reform of developmental and gateway mathematics programs based on the NMP principles.¹

To support colleges in this reform effort, the Dana Center develops tools and services to support implementation. This guide is one such tool. The Dana Center also develops professional learning opportunities for faculty and staff and curricular materials for courses.

In 2013, nine codeveloper colleges began working closely with the Dana Center to inform and advise on the development of the New Mathways Project. Many of the recommendations in this implementation guide draw on the experiences of faculty and staff at these institutions: Alamo Colleges–Northwest Vista College (San Antonio, Texas); Austin Community College (Austin, Texas); Brazosport College (Lake Jackson, Texas); El Paso Community College (El Paso, Texas); Kilgore College (Kilgore, Texas); Lone Star College–Kingwood (Kingwood, Texas); Midland College (Midland, Texas); South Texas College (McAllen, Texas); and Temple College (Temple, Texas).

Other colleges in Texas had the option to enroll in the project as active-learning sites or capacity-building sites. For more information, see Appendix A.

¹For more information about the New Mathways Project, see the Copyright and Acknowledgments section at the end of this guide.

Overview of the Guide

This guide is designed for colleges interested in implementing reform based on the NMP principles. It offers detailed guidance on the preparations necessary during the academic year prior to implementation.

Each section in the guide lists key activities within each of the phases before implementation and identifies groups that will have primary responsibilities for those activities. Group members, in turn, may be assigned individual tasks to assist in achieving or advancing the goals for that stage. In addition, each section includes action items, resources available through the Dana Center, and things to consider as groups work on their tasks.

Is this guide only for Texas?

No. The guide does contain information that is specific to Texas such as course number and references to state policy. However, the general information, the processes outlined, and the examples from the field are applicable to all colleges and could even be extended to general guidance for different types of systemic change initiatives.

Key Features

This step-by-step guide offers the following features to assist in planning, organizing, and executing each phase.

- **Preparation Process for Implementation** table shows a summary of the key activities in each phase of the work.
- **Overview of Primary Responsibilities** in Implementing the NMP Model table summarizes the responsibilities of different stakeholders throughout the three phases of the work.
- **Action Items** tables include key tasks and available resources to carry out each phase.
- **Narrative Explanation** follows each Action Items table, providing more detailed information to support action items and additional activities.
- **Appendices** section offers resources, most of which are also available as printable files on the Dana Center website.

How to Use This Guide

This guide is designed for colleges interested in improving student success and completion based on the four NMP principles. The guide covers the preparations necessary during the academic year before the courses are taught.

A note on terminology: We generally use “NMP” to refer to local work to implement these principles. Thus, the NMP at your college may be called something different and may look

different from an NMP implementation at another college. Occasionally, we will refer to the statewide work on the NMP or the specific tools and resources created by the Dana Center, but we will note the distinction from your local implementation.

In certain places, the guide makes reference to—and provides information about—the specific course materials developed by the Dana Center. Colleges that are implementing other strategies or course materials will still find many of the processes and tools for redesign valuable and may simply disregard the specific references to the Dana Center’s courses.

Process and Suggested Timeline

The process occurs in three phases:

Phase I: Organizing for Change—Defining the NMP in terms of institutional mission and establishing a team to lead the work.

Phase II: Planning for Change—Gathering information and input to inform the development of an implementation plan.

Phase III: Preparing for Implementation—Organizing college-wide and instructional-level work to prepare to implement the strategies identified by the college leadership team.

The table below shows the key activities and timelines of each phase in the year prior to implementation. As implementation of the NMP model continues, we will make available supplements addressing the later phases.

Preparation Process for Implementation

| Primary Responsibilities | Key Activities By Phase | | Suggested Timeline |
|---|---|--|--------------------|
| Phase I: Organizing for Change | | | |
| College Leadership | <ul style="list-style-type: none"> Set the Charge Establish the Leadership Team | | 1 month |
| Phase II: Planning for Change | | | |
| Leadership Team | <ul style="list-style-type: none"> Understand the Current Context Assess the Needs Explore the Options Make a Plan | | 4 months |
| Phase III: Preparing for Implementation | | | |
| Leadership Team and Course-Specific Instructional Teams | College-Wide Work | Instructional-Level Work | 6 months |
| | <ul style="list-style-type: none"> Plan Campus-Wide Communication Allocate Resources Schedule Courses Plan Advising and Recruitment Prepare for Evaluation Plan for Academic Support Conduct Outreach to External Partners | <ul style="list-style-type: none"> Establish the Instructional Teams Identify Obstacles and Opportunities Plan Instructional-Level Communication Prepare to Teach the Courses: Logistical Planning Prepare to Teach the Courses: Instructional Planning | |

Recommended Use

How you use this guide will depend on your particular role in implementation, although everyone should keep in mind that there is overlap between the strands that will require collaboration across stakeholder groups and strands that require awareness of work across the full span of the project.

- **Leadership team:** At least one member of the leadership team should be responsible for oversight of the entire project and should be familiar with this entire guide. Other leadership team members may choose to focus on understanding deeply the responsibilities in their strand of work. We recommend that periodically, the full leadership team review the action items in each section.
- **Other teams and responsible parties:** Other teams may focus on their own strands of work. For example, instructional teams should carefully review and discuss the instructional-level section and then use that section's action items list for keeping track of progress over time. We recommend that a liaison from the leadership team periodically brief the various stakeholder groups about the work across all strands of the project.

We strongly recommend approaching this work as systemic change with broad engagement across institutions. As with any type of initiative, support from stakeholders is crucial to success. Below is a table showing stakeholder groups and their primary responsibilities within each phase of implementing the NMP model on their campuses. Because the organizational structures of colleges vary widely, the titles and roles of those involved in the work may differ from college to college. We attempt to identify generally the types of roles that should be included in the different phases.

Overview of Primary Responsibilities in Implementing the NMP Model

| Stakeholder Group | Phase I | Phase II | Phase III |
|-------------------|--|--|--|
| Board of Trustees | <ul style="list-style-type: none"> • Set high-level goals for student success and completion. | <ul style="list-style-type: none"> • Ask for reports on planning. | <ul style="list-style-type: none"> • Ask for reports on preparation. |
| President | <ul style="list-style-type: none"> • Set the charge for the college and leadership team. | <ul style="list-style-type: none"> • Review and promote implementation plan. • Allocate resources. | <ul style="list-style-type: none"> • Ask for reports on preparation. • Allocate resources. • Support outreach to external partners. |

Overview of Primary Responsibilities in Implementing the NMP Model

| Stakeholder Group | Phase I | Phase II | Phase III |
|--|---------|---|--|
| Administrators | | <ul style="list-style-type: none"> • Convene and organize work of the leadership team. • Ensure that all leadership team members understand the context before making decisions. • Build buy-in and engagement with faculty and staff. | <ul style="list-style-type: none"> • Communicate progress to the college community. • Coordinate concurrent strands of work. • Keep working groups informed of overall project. • Conduct outreach to external partners. |
| Math and Learning Frameworks (Student Success) Faculty | | <ul style="list-style-type: none"> • Provide information on current context. • Collaborate with faculty in other departments to understand their needs. • Review materials and programs that might be models for the local implementation. | <ul style="list-style-type: none"> • Prepare to teach new courses. • Keep colleagues who are not directly involved informed of work. • Communicate with faculty in programs of study aligned with courses. |
| Staff from Student Support Programs, as appropriate | | <ul style="list-style-type: none"> • Provide information on current context. • Review materials and programs that might be models for the local implementation. | <ul style="list-style-type: none"> • Prepare to modify or expand services to support students in new courses. • Communicate with all student support programs that serve the target population. |
| Institutional Researchers | | <ul style="list-style-type: none"> • Provide data on current context. • Help the leadership team use data effectively. | <ul style="list-style-type: none"> • Develop an evaluation plan. • Support advisors and faculty in identifying the population of eligible students and developing a recruitment plan. |
| Advisors | | <ul style="list-style-type: none"> • Provide information on the current context. • Help identify needs of programs of study. | <ul style="list-style-type: none"> • Develop and implement a recruitment plan. • Train and support advising teams. |
| Faculty from Major Programs of Study | | <ul style="list-style-type: none"> • Provide information about needs for mathematics. • Help review proposed materials or programs. | <ul style="list-style-type: none"> • Help advise students. • Advise on needs of programs. |

Access to Dana Center Online Resources

The Dana Center offers tools that can assist in the planning, preparation, and implementation of your local reform effort. These tools are available on the Dana Center NMP website.

1. Go to <http://www.utdanacenter.org/higher-education/new-mathways-project>
2. Choose one of the following main categories:
 - The New Mathways Project in Texas—Provides information about the Dana Center’s joint enterprise with the Texas Association of Community Colleges and the Texas statewide implementation of NMP.
 - The New Mathways Project Curricular Materials—Includes the mathematics pathways structure, specific course information, and related materials.
 - New Mathways Project Technical Assistance—Includes webinar recordings and other tools.
 - Higher Education Resources—Offers NMP background information, policy materials, presentations, FAQ, and a spreadsheet with detailed information on course requirements detailing specific information

Access to the NMP Implementation Guide Appendices

Electronic files of the appendices in this guide can be found on the NMP Implementation Guide webpage: http://www.utdanacenter.org/nmp/implementation_guide

Feedback

The Dana Center appreciates feedback about the content, structure, and usability of this guide. We encourage individuals and teams to note what is—and is not—helpful about the guide and to share suggestions for additional resources via **mathways@austin.utexas.edu**.

Phase I

Organizing for Change

Institutional leadership plays an important role in initiating a project of this magnitude by communicating the institutional commitment to the work, framing the project in the context of the broader mission, and establishing clear responsibilities and reporting structures.

Key Activities:

1. Set the charge.
2. Establish the leadership team.

1 — Set the Charge

Action Items

President sets the charge for implementation of the NMP principles.

- Defines the role of the NMP in the institutional mission and strategic plan.
- Designates a direct report to lead the work.

President communicates the charge to the college.

- Disseminates information about the statewide NMP project and the opportunities it creates for the college.

Dana Center Resources

The NMP in Texas: Active-Learning Sites and Capacity-Building Sites (Appendix A)

The Challenges of Creating Ownership

Many reforms and redesigns are motivated by external pressures such as funding, policy, or accreditation requirements. Even “home-grown” initiatives can be perceived as being pushed through by a few individuals. One of the challenges of leadership is to help the college community make an initiative their own. Making explicit connections between the initiative and the mission and strategic plan positions the initiative as a continuation of the overall work of the college. Below are some strategies that leaders can use.

- Make the project highly visible: The president, provost, and deans should mention the project at every public meeting, find opportunities to highlight the work, and ask for frequent reports.

- Consider how language impacts perception: You may want to use the term “NMP” to tie to a larger context in the state or nation, or you may want to use a name that links it to other local work and the strategic plan.
- Find ways to tie the project to the motivations of different stakeholder groups: Highlight how the project helps students succeed, reduces the cost of education, streamlines processes, or connects faculty to peers at other institutions.



The NMP in Texas

All 50 community college systems in Texas have endorsed and are contributing to the development of the New Mathways Project in Texas through the Texas Association of Community Colleges. While NMP sets statewide standards for reforming developmental and gateway mathematics programs, colleges decide how to structure their own courses, including curricular materials, and services based on the four NMP principles.

Some faculty members may have the misperception that this effort intends to supersede local decision making by forcing colleges to implement specific courses that are based on curricular materials developed by the Dana Center. This is not the case. It is important to address this misperception early and often. Providing accurate information about the project and engaging faculty in the planning process are key.

The Dana Center provides materials to help colleges disseminate information about the NMP project, and this guide suggests strategies to build support from a broad range of faculty and staff. Appendix A contains a document that explains the flexibility for implementation for active-learning sites and capacity-building sites.

2 — Establish the Leadership Team

Action Items

Establish and convene the leadership team.

- Identify members in the leadership team. See suggestions below about members.
- Establish responsibilities for individual members. The list below may be used as a guideline, but the responsibilities should be customized based on local needs. In addition, consider a communication lead who is responsible for sharing information widely.
- Have each team member read this *Implementation Guide*.
- Schedule regular meetings and develop a timetable for sharing reports and for receiving reports from the instructional team and other subcommittees.

Dana Center Resources

Implementation Guide

NMP website: http://www.utdanacenter.org/nmp/implementation_guide

Sample Implementation Plans for Phase I and Phase II from McLennan Community College (Appendix B) and Tarrant County College (Appendix C)

The local NMP leadership team is charged with:

- Gathering information to make informed decisions about how the college will improve student success based on the NMP model.
- Building college-wide buy-in and consensus.
- Creating a plan for implementation.
- Overseeing implementation of the NMP model.

The team should be assembled with the purpose of representing the stakeholder groups and with consideration of their different tasks and the challenges they might face. Team members should be assigned responsibilities for tasks such as facilitation and management of information and communications. We provide suggestions of groups that should be represented in your leadership team and the responsibilities of these representatives.

The NMP leadership team does not necessarily need to be a newly created group. The college may already have a team overseeing college-wide initiatives, such as Achieving the Dream, that could take responsibility for implementing the NMP. An advantage of using an existing group is that it builds on current structures and makes it more likely that work will be coordinated. If there is a decision to combine the NMP with another working group, we recommend that one or two individuals in leadership positions are charged with ensuring that the NMP is not subsumed by other initiatives.

Over time, members of the leadership team may change. Good planning, documentation, and communication across the college community will help ease these transitions and bring new members up to speed quickly.

Our recommendations for membership include:

High-level administrator

Responsibilities: Lead the initiative at the college level; report to the president; ensure that all stakeholders are identified and included; identify obstacles and opportunities on the college level; ensure that a college-wide communication plan is implemented.

Institutional researchers

Responsibilities: Collect data on current programs; support the leadership team in using data; collect data to be used in implementation and evaluation.

Faculty members representing gateway courses and developmental mathematics courses

Responsibilities: Provide information about current programs; review options for implementation; establish and lead the instructional team for new courses; ensure that courses are scheduled; ensure that a mathematics department communication plan is implemented; reach out to key client departments; plan for coordination with other mathematics reform initiatives.

Faculty members representing mathematics adjunct faculty

Responsibilities: Ensure that implementation and communication plans consider the needs of adjunct faculty and that those faculty members are brought into the process.

Faculty members representing the learning frameworks (student success) course

Responsibilities: Provide information about current programs; review options for implementation; establish and lead the instructional team for new courses; ensure that courses are scheduled; work with mathematics faculty to integrate student success strategies into courses; plan for coordination with other student support services.

Student support services

Responsibilities: Provide information about current programs and services; consult on options for implementation; identify opportunities to build on existing student support services to facilitate the implementation of the NMP; identify services that may need to be created or expanded, including advising and recruitment, academic support, success programs such as Early Alert, etc.

Advising

Responsibilities: Provide information about current programs and services; consult on options for implementation; identify all staff and faculty who advise students; ensure that a communication, training, and implementation plan on recruitment and advising is implemented.



Things to Consider

- At your college, are there additional stakeholder groups (e.g., developmental English or major programs of study, faculty from affected programs of study) that should have a representative on the team? Are there groups that should be given roles as advisors or liaisons?
- Who will be responsible for managing meetings, including setting agendas, facilitation, etc.? Is there administrative support to assist with scheduling meetings, recording minutes, etc.?
- Should there be any subcommittees? Since instruction is a primary focus of the work, it may be useful to establish a cross-disciplinary instructional subcommittee.

Need Help?

Would you like to talk with Dana Center staff or colleges that have implemented the NMP?

Contact us at
mathways@austin.utexas.edu.

Phase II

Planning for Change

The goal of the NMP model is to improve student success and retention through implementation of four principles:

1. Multiple mathematics pathways with relevant and challenging content aligned to specific fields of study
2. Acceleration that allows students to complete a college-level math course more quickly than in the traditional developmental math sequence
3. Intentional use of strategies to help students develop skills as learners
4. Curriculum design and pedagogy based on proven practice

This section provides guidance on the process of gathering information to make an informed decision about the strategies and models that your college will use to implement these principles.

Please note again that “NMP” generally refers to your local work to implement the NMP principles. Occasionally, we refer to the statewide work on the NMP or the specific tools and resources created by the Dana Center, but this distinction will be made from your local implementation.

In this second phase, the leadership team must undertake four key activities that lay the foundation for planning and organizing the project to implement their local reform effort.

Key Activities:

1. Understand the current context: Gather and share information.
2. Assess the needs: Determine your local needs and priorities.
3. Explore the options: Learn about resources and strategies used by others.
4. Make a plan: Decide on local goals and strategies to achieve those goals.



Keep in Mind

There is a natural chronological order to the steps, but often activities will overlap.

Be mindful not to jump to planning before collecting and evaluating information about both your local context and your options for strategies.

1 — Understand the Current Context

Overview: We strongly recommend that the leadership team take time to understand the current context of the institution before developing a plan of action. Current context includes structures such as student enrollment and persistence data, state policies, course offerings, institutional policies and processes, student support services, and department organization. Current context also includes cultural aspects of the institution such as how individuals and departments communicate and work together, what information is known by different stakeholder groups, and what the attitudes are about change. It is important that the entire team understand the current context from the perspective of the different stakeholder groups.

Action Items

Assign team members to gather information about the current context of the institution using the suggestions below. Be specific in the assignments and provide examples of the types of information needed in order to avoid wasted time on collecting unhelpful information.

Summarize the information in a written report to be reviewed by the leadership team and shared with the full college community.

Dana Center Resources

Redesign Readiness Worksheet (Appendix D)

Mathematics Pathways Transfer Resource (Dana Center NMP website, http://www.utdanacenter.org/nmp/implementation_guide)

Persistence Tool (Appendix E)

Current Structures

The four NMP principles are used to organize the information-gathering process about structure. Each principle is listed below with relevant guiding questions and suggestions. The list is not intended to be chronological. Another way to organize this process is to use the *Redesign Readiness Worksheet* in Appendix D.



Keep in Mind

Almost every college is already working to improve student success by redesigning math courses or implementing supports for students. It is important to honor and learn from those efforts. Implementing the NMP model should build upon previous work, not replace it.

Fully understanding the current context helps to ensure that current efforts are recognized and considered in planning.

Principle 1: Multiple mathematics pathways with relevant and challenging content aligned to specific fields of study

- What are the current course options for students in developmental *and* gateway mathematics courses? How do these options align to different programs of study? It is especially helpful to provide charts or visuals to represent the options.
- Gather data to understand the profile of the student population in terms of programmatic needs (e.g., number of students in different programs of study, students who are in terminal programs, students who transfer).
- What are the mathematics requirements for the major programs of study at the college? Are there state or national recommendations for the mathematics requirements for these programs? Are the programs satisfied with the current mathematics options?

Principle 2: Acceleration that allows students to complete a college-level math course more quickly than in the traditional developmental math sequence

- What are the existing pathways for developmental mathematics students to and through college-level mathematics?
- Are changes being made to existing pathways as a result of changes in state policy?
- Gather data to understand how students currently move through these pathways. Use the Dana Center *Persistence Tool* (Appendix E) to organize this information.
- Gather data to understand the characteristics of students who are successful in the current structure and those students who are not. Look for trends in different types of demographics (e.g., age, gender, ethnicity, full- or part-time status, program of study).

Principle 3: Intentional use of strategies to help students develop skills as learners

- What existing programs or services support students to develop skills as learners and college students (e.g., orientation, student success courses or workshops, TRIO programs)? Are these programs/services required or optional? Who makes the decisions regarding the programs? If you have a large number of programs, you may want to focus on those programs that are part of the normative experience for a majority of students.
- Gather data to understand who uses—and who does not use—these services (e.g., overall number of students, demographics of students, overlap of services).
- Gather data on the effectiveness of these services.
- Is there coordination among services regarding delivery and content?
- Is there coordination between services and academic programs to integrate strategies into academic courses?

Principle 4: Curriculum design and pedagogy based on proven practice

- What is the evidence base for current structures and practices in mathematics and student success services? Consider both the research base and the local data on student success.
- What is the evidence that required course pathways are suited to the demands of programs of study?

Current Culture

The leadership team should establish clearly how the NMP fits into the institutional mission and strategic plan.

- Have a clear mandate from the president and board of trustees. Consider who will communicate this mandate to the college community at large and in what manner.
- Create an inventory of all projects, initiatives, and reform efforts that potentially intersect with the NMP. Areas of intersection may not be obvious. For example, changes in programs unrelated to mathematics may place a burden on advisors at the same time that they are being asked to make changes related to the NMP.
 - How do other existing projects affect the capacity of departments and individuals to work on the NMP?
 - Are there opportunities to combine and leverage resources between projects with common goals?
 - Are there any projects that conflict with the NMP principles? Who will address these issues and how?
 - Who sets priorities between projects and how?

The leadership team should understand the departments or programs that will be involved in the work—for example, mathematics department(s), departments offering student success courses or related services, advising, etc.

- Who are the staff and faculty?
 - What are the different classifications (e.g., full- or part-time, tenure-track, adjunct)?
 - Who is most impacted by the NMP?
 - What do individuals in the department know and think about the NMP?
- How does the department operate?
 - Who has official leadership roles? Who is influential?
 - How are decisions made?
 - How is information communicated? Are there established processes for training or information sharing? Do these processes apply to part-time staff or adjunct faculty?
- What is the capacity of the department for new work?
 - Has capacity been affected by other initiatives, staff turnover or cuts, leadership transitions, etc.?
 - What are the attitudes of the people in the department about change?
- Are there collaborative partnerships between departments?
 - If there are separate developmental and college-level mathematics programs, the leadership team should understand how these departments work together, including the amount of interaction between individuals in departments.
 - How are math course requirements determined for programs of study? For example, what role does the mathematics department play in advising and informing faculty in charge of the degrees and programs on campus?



Things to Consider

Based on the information you gathered, consider the following:

- Are all pertinent stakeholder groups represented on the leadership team?
- What did this process reveal about current communication across departments? Are there examples of strong collaboration and communication that can be utilized? Are there examples of misperceptions that could be corrected with improved communication?
- Is the institution ready to embark on a project that requires systemic change? If not, what needs to be done to prepare for this type of work? Are there questions about institutional priorities? Are there concerns about capacity and resources? Do people across the institution need more information about the current context?

2 — Assess the Needs

Overview: Now that you have gathered valuable information and come to a common understanding about your current context, you will assess your institutional needs by answering the following questions.

- What is currently working and for whom?
- Where are the gaps?
- What are the priorities?

For this section, we revised the NMP principles into the form of questions about your institution.

Action Items

Hold team work session(s) to:

- Discuss the report on the current context.
- Assess the needs.
- Define priorities for future work.

Principle 1: What are the institutional needs for multiple mathematics pathways with relevant and challenging content aligned to specific fields of study?

Keep in mind two goals in this discussion: 1) preparing students for the mathematics they will use in their programs of study and in their lives as citizens and consumers; and 2) increasing student success in mathematics by offering content that is engaging and relevant to their lives.

Principle 2: What are the opportunities to accelerate student progress in completing a college-level math course?

Note that acceleration can occur in two ways: 1) shortening course sequences; and 2) offering intensified options that enable students to complete courses in a shorter period of time.

Principle 3: How can the institution make intentional use of strategies to help students develop skills as learners?

This principle has two components: content and delivery—in other words, what information is taught and how is it taught. An important consideration in your assessment is whether all students receive coherent, consistent information and how well that information is reinforced over time and in multiple ways.

Principle 4: How does the institution use curriculum design and pedagogy based on proven practice?

In assessing this principle, consider whether the current culture and capacity around evidence-based decision making need to be improved. Do faculty and staff have opportunities and resources to learn from and use research and local data? Do they routinely use research and data in decision making?

3 — Explore the Options

Overview: The previous two steps were inward-facing to establish priorities based on your current context and needs. The next step is outward-facing to gather information about strategies and resources that you may want to incorporate into your plan. We suggest some resources from the statewide NMP project, which are available from the Dana Center. You may also want to explore other resources developed by programs or initiatives at other colleges.

Action Items

Assign team members to gather information about resources and strategies related to the priorities.

Hold events or establish processes to share information about possible strategies and gather input from faculty and staff.

Dana Center Resources

Resources are described below and are available at the Dana Center NMP website, <http://www.utdanacenter.org/higher-education/higher-education-resources>

There are a number of organizations and individuals who disseminate information, materials, and services that align with the NMP principles. A few helpful references are listed.

Initiatives

- American Mathematical Association of Two-Year Colleges (AMATYC) New Life Project, http://www.devmathrevival.net/?page_id=8
- FOCUS (Fundamentals of Conceptual Understanding and Success), Texas State University, <http://www.math.txstate.edu/devmath>
- *Statway*TM and *Quantway*TM,² the Carnegie Foundation for the Advancement of Teaching, <http://www.carnegiefoundation.org/statway> and <http://www.carnegiefoundation.org/quantway>

Products and Services

- *Math Lit: A Path to College Readiness* by Kathleen Almy and Heather Foes (Pearson 2014), and blog by Kathleen Almy, <http://almydoesmath.blogspot.com>
- On Course (Skip Downing), <http://www.oncourseworkshop.com>
- Academic Success Press (Paul Nolting), <http://academicsuccess.com>

You may also have other types of resources available through organizations that your college has worked with such as the Center for Community College Student Engagement, Achieving the Dream, or the League of Innovations. Coaches or other types of consultants associated with your college may have information to share or may be able to connect you to other colleges doing similar work. In addition, faculty may have access to information and networks through professional organizations such as the American Mathematical Association of Two-Year Colleges (AMATYC) and the Mathematical Association of America (MAA).

Tools and Resources from the Dana Center

The Dana Center offers tools and resources in four main categories: mathematics curricular materials, learning frameworks curricular materials, general faculty professional development, and implementation support. All of these materials are free for use by Texas colleges, but there is a student fee for most curricular materials. The Dana Center also offers training for faculty and staff. These events are generally free for Texas colleges, although there may be a fee if the event is hosted by another agency (e.g., offered as a workshop at a conference).

² *Statway* and *Quantway* are trademarks of the Carnegie Foundation for the Advancement of Teaching.

Colleges outside of Texas are invited to use the NMP resources, some of which are free for general use while other resources are available for a fee. Complete information for use outside of Texas is available at our website.

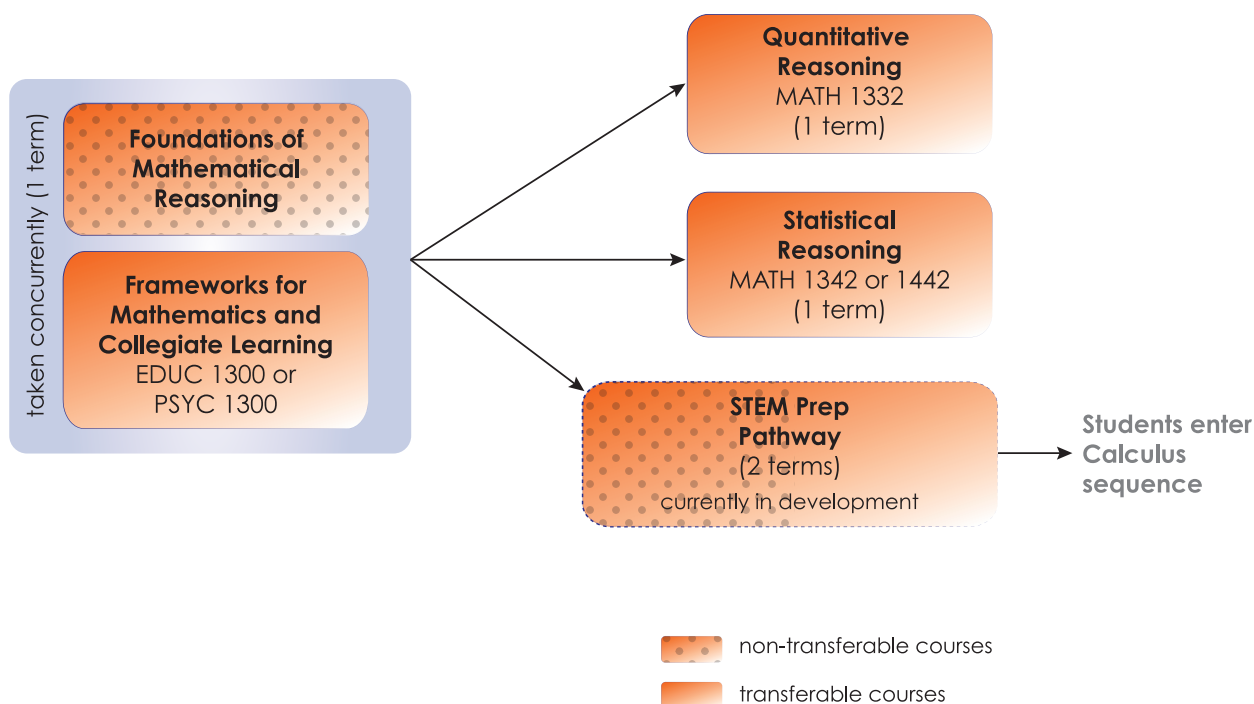
In the following sections, we list resources that are available at the time of printing this guide; we also discuss plans for future resources. Because we are continually developing resources, we encourage you to visit our website to get an updated list and to see our upcoming events: <http://www.utdanacenter.org/higher-education/new-mathways-project>

We encourage you to sign up for the Dana Center’s NMP email updates, which announce new tools and other resources as they become available. To be placed on our contact list, email us at mathways@austin.utexas.edu. Please indicate if you are at an institution in Texas.

Mathematics Curricular Materials

The Dana Center develops curricular materials for courses that support developmental mathematics students to earn college credit in one of three pathways: quantitative literacy, statistics, or STEM Prep (courses leading to Calculus). The courses are designed to align with the NMP learning frameworks course and include embedded student success materials.

Figure 1: NMP Courses



An Overview of the NMP: Focus on Curricular Materials (Appendix F) explains the structure and design of these pathways more fully.

These NMP courses align with the *Texas Academic Course Guide Manual* (ACGM) as shown below.

Development Timeline for NMP Courses

| Course | ACGM Course | Available in Texas | Available Outside Texas |
|---|-------------------|--------------------|-------------------------|
| Foundations of Mathematical Reasoning (developmental course) | NA | Fall 2014 | Fall 2014 |
| Statistical Reasoning (college-level course) | MATH 1342 or 1442 | Spring 2015 | Spring 2015 |
| Quantitative Reasoning (college-level course) | MATH 1332 | Spring 2015 | Spring 2016 |
| STEM Prep courses (exact structure TBD, likely two-semester sequence) | TBD | Spring 2016 | Spring 2017 |

Consider establishing teams with developmental and gateway mathematics faculty and faculty from major programs of study to review materials appropriate to a program. For example, health sciences faculty could be included in reviewing the *Foundations* and *Statistical Reasoning* courses.

The following resources are available on the NMP Curricular Materials webpage (as of January 2014) to help faculty learn about the courses (http://www.utdanacenter.org/nmp/curricular_materials):

- NMP Curriculum Design Standards
- About the NMP: Mathematics Focus (recorded webinar)
- Learning outcomes and course outlines:
 - Foundations of Mathematical Reasoning—posted
 - Statistical Reasoning—posted
 - Quantitative Reasoning—to be posted by Spring 2014
 - STEM Prep—TBA
- Course overview and sample lessons
 - Foundations of Mathematical Reasoning—posted
 - Lessons for other courses will be posted as the courses are finalized.

Learning Frameworks Curricular Materials

The NMP learning frameworks course, *Frameworks for Mathematics and Collegiate Learning*, is designed as a college-level course to teach students the skills, attitudes, and beliefs necessary to be successful in college. It meets the Texas ACGM requirements for EDUC or PSYC 1300. In the Dana Center's NMP course model, the *Frameworks* course is offered as a co-requisite to the *Foundations* course (the developmental mathematics course). This rationale is explained in *An Overview of the NMP: Focus on Curricular Materials* in Appendix F.

Curricular materials for this course are available on the NMP Curricular Materials webpage and are free for colleges to use (http://www.utdanacenter.org/nmp/curricular_materials). The materials include:

- About the NMP: Student Success Focus (recorded webinar)
- Learning outcomes and course outline
- Course introduction
- Instructor guide for the course

General Faculty Professional Development

The Dana Center is developing a series of online training modules for faculty. These modules are designed to encourage teams to share and discuss ideas.

Some of the modules will directly apply to the Dana Center curricular materials. Other modules will focus on general pedagogical and content topics and may be used to support professional growth for faculty, using different curricular materials or delivery methods and in different content areas. In Summer 2014, we will release modules on supporting positive student mindsets and using active-learning strategies in the classroom.

Implementation Support

This guide includes a number of implementation tools such as templates for a communication plan, recruitment plan, and data analysis. In addition, the following resources are currently available on the website or are in development:

- Transfer and Applicability FAQ
We developed this resource in collaboration with the Texas Higher Education Coordinating Board to address common questions about policies affecting mathematics course offerings.
- Mathematics Pathways Transfer Resource
This document is a compilation of the mathematics requirements by programs at four-year institutions in Texas. At this time, the resource includes 22 colleges and universities; more institutions will be added.
- Tools for Advisors (to be released in 2014)

4 — Make a Plan

Overview: The final step of this phase is to set goals for the NMP implementation and to make a plan for achieving those goals. We suggest making a long-term plan for 3 to 5 years with high-level action steps and milestones and also creating a more detailed plan for the coming year. The remaining sections of the implementation guide can assist in making the detailed plan.

Action Items

Set goals for student success and completion.

Create a 3-to-5-year implementation plan and a more detailed plan for the coming year.

- Leadership team provides opportunities for stakeholder groups to give input.
- President or the president's designee approves plan.

President presents the plan to the college community, including the Board of Trustees.

We recommend careful consideration in planning for the project at scale. The goal is to have the innovation become the *normative practice* for a significant proportion of the target population. That is, the path of least resistance will lead students to the innovation. If they have a good reason for doing something different, they will need to actively opt out.

Below are some critical issues to consider in planning for scale.

- Design with the end in mind: Be careful not to design an ideal program that is so complex or resource-intensive that it cannot be implemented with a large student or faculty population.
- Find ways to actively engage stakeholders: Do not rely on passive forms of communication such as email or newsletters. Have people participate in a lesson. Facilitate discussions around classroom video or interviews with students.
- Allow for different levels of engagement: Expect everyone to commit some time, but do not ask everyone to commit a lot of time.
- Do not assume you have to start small: Make sure there are good reasons for the limits you set.

Some of your design decisions will be affected by consideration of the practicality of implementing the plan to affect large numbers of students. Planning ahead can help address and minimize the effect of these potential limitations. Examples of questions to ask are:

- Who will staff new courses and programs when they are implemented at scale? Will there be a dependence on adjunct faculty? If so, how will they be supported to implement effectively? What resources are available for that support?
- Does the design of your proposed programs or courses create too many restrictions on students who will be eligible? For example, cohort models create challenges

for scheduling. The Dana Center's model of requiring concurrent enrollment in a developmental math and a learning frameworks course may eliminate students who have taken a learning frameworks course previously.

For colleges implementing the Dana Center NMP courses, there are key decisions to be made. These decisions are described in the section "Prepare to Teach the Courses: Logistical Planning" in Phase III. You may wish to speak with a Dana Center staff member or a representative from another college during this process.

What does planning for scale really look like?

One way to plan for scale is to implement at scale from the start. For example, when Brazosport College worked with the Dana Center to develop a new curriculum for learning frameworks courses, the college used the new curriculum in every single class in the first semester. This approach presented challenges with communication and ensuring fidelity of implementation, but it also created shortcuts in the later stages of implementation by engaging all the faculty from the beginning.

This "all-or-nothing" approach is not always practical. Sometimes there are very good reasons to start small, but it is still possible to start building the structures that will support scaling up and innovation at the beginning of the process.

Below we offer two cases to illustrate the difference between implementing a pilot and planning for scale.

Scenario: Western Community College (WCC) has three campuses and a mathematics department of 10 full-time faculty and approximately 25 adjunct faculty. WCC is implementing a statistics pathway for developmental mathematics students.

Case 1: Implementing a pilot

Two full-time faculty at one campus implement the pathway that includes a developmental course and a college-level course. They offer two sections of each. They present a report at department meetings at the beginning of the year and at the end of each term. In the second year, two more faculty offer one section of each course at the other campuses.

Case 2: Planning for scale

Two full-time faculty at one campus implement the pathway that includes a developmental course and a college-level course.

They offer two sections of each. Two other faculty members at each of the other two campuses and four adjunct faculty are designated as “shadow instructors,” who will implement the courses in the following year. The shadow instructors attend key planning meetings and observe the classes at least once each term. A mandatory district-wide event is held during each term for mathematics faculty. At these events, the faculty teach a lesson to their colleagues and discuss student artifacts such as written work or classroom video. The adjuncts help plan for structures to support other adjunct faculty.

In the second year, the shadow faculty teach sections, and new faculty move into the “shadow” role. The original two faculty members begin outreach to targeted client departments.



Things to Consider

- Have you considered staff and faculty capacity for taking on new work?
- Do you have the support of key stakeholder groups?
- Has the college allocated resources to support the plan?
- It may be important to include the registrar at this point to begin planning how to handle issues such as linking courses or ensuring that the registration system flags students required to take certain interventions.
- How will you plan for scale? What does “scale” mean for your institution? You might consider using the examples in this section as a basis for discussion on the pros and cons of different strategies.

Need Help?

Would you like to talk with Dana Center staff or colleges that have implemented the NMP?

Contact us at
mathways@austin.utexas.edu.

Phase III:

Preparing for Implementation

This section helps the leadership team to carefully consider all steps involved in the complex process of implementing systemic, sustainable reform.

The section is organized into two strands based on *college-wide work*, overseen by the leadership team, and *instructional work*, overseen by the content faculty preparing to teach the courses. This organization is *not* chronological; the two different strands of work will overlap.

At least some members of the leadership team should understand and be aware of both strands to ensure appropriate integration of the work.



Keep in Mind

In order to make the process more concrete, we refer specifically to implementing the Dana Center's courses and discuss specific Dana Center materials. However, colleges implementing different courses or strategies will still find this section useful as they will follow the same action steps and consider the same questions.

Key Activities:

College-Wide Work

1. Plan campus-wide communication
2. Allocate resources
3. Schedule courses
4. Plan advising and recruitment
5. Prepare for evaluation
6. Plan for academic support
7. Conduct outreach to external partners

Instructional-Level Work

1. Establish the instructional teams
2. Identify obstacles and opportunities
3. Plan instructional-level communication
4. Prepare to teach the courses: Logistical planning
5. Prepare to teach the courses: Instructional planning

College-Wide Work

1 — Plan Campus-Wide Communication

Overview: Once the leadership team has been established, campus-wide communication is the team's first and most important ongoing responsibility. It is essential to communicate specific details about the NMP and to convey the role the project plays in the college's overall strategic plan and student success agenda. The NMP should be seen as a vehicle for achieving institutional goals and supporting institutional values.

Action Items

- Identify stakeholders and potential allies.
- Address potential coordination and collaboration with other programs and initiatives.
- Create and begin implementing the communication plan, including timeline.

Dana Center Resources

- Communication Plan Template (Appendix G)
- Sample Communication Plan Template from Temple College (Appendix H)

The leadership team will develop a communication plan for visibility and outreach to various constituencies. In addition, team members will be responsible for communicating with their own constituencies, informing their colleagues and bringing any questions and concerns to the team. Besides the constituencies with direct representation on the leadership team, there are other audiences to consider. These groups may include:

- Board of Trustees
- Registrar's office and articulation officers
- Academic Senate
- Faculty and advisors at high schools and transfer institutions
- Student groups and clubs that might participate in student recruitment

The plan should address communication across the college as a whole, which may include multiple campuses. In addition, the leadership team should identify other college initiatives that address student success and actively look for ways to connect and collaborate, which means connecting with natural allies on campus.



Example from the Field: Achieving Campus-Wide Communication and Buy-In

Paula Talley, Division Director of Student Success at Temple College, taught an NMP mathematics lesson to an audience that included both developmental and credit-math faculty; developmental reading, writing, and study skills faculty; tutors; advisors; and administrators.

This teaching demonstration provided the different stakeholders an opportunity to see how the course used active learning and real-world content. Talley said, “The amazing part to watch with this lesson was the reactions of the non-math people and watching their math-anxious faces transform to expressions of excitement over learning math!” For any project to be successful, all stakeholders must truly understand the purpose in order to achieve 100% buy-in.

One strategy is to conduct a network analysis to identify the full range of stakeholders. The analysis can be in the form of a schematic or a geographic map of the college. Another strategy is to create a list of each student success program or initiative, along with its goals and strategies, and look for commonalities and opportunities to leverage resources for communication, staffing, training, or implementation. Note: Much of this work may have already been completed in “Understand the Current Context” in Phase II.

A *Communication Plan Template* is provided in Appendix G.



Things to Consider

- Who needs to be involved early? Why?
- Who needs to be aware and informed? Why?
- What other programs or initiatives potentially overlap with or draw resources away from the NMP?
- Whose work will be affected by the implementation of the NMP (e.g., advising, tutoring, information technology, other campus units)?
- Which academic programs will be affected? How will they be affected? How will the leadership team communicate with these programs?
- What opportunities exist for communicating with faculty and staff, either college-wide or in groups?

- How will the president and other high-level administrators help communicate the NMP as a strategic priority?
- Who are the opinion leaders for different stakeholder groups? How can they be involved in the project and the communication plan?

2 — Allocate Resources

Overview: The success of any major initiative is highly dependent on the adequate allocation of resources to support the work. The leadership team will need to review the allocation of resources periodically as the work grows and progresses.



Example from the Field: Prioritizing Necessary Resources

Jeff Detrick, Dean of Instruction at Brazosport College, ensures that instructors have what they need to be successful because funds are budgeted for their travel and participation in conferences, professional development, meetings, and workshops. He believes that “you value teachers with your budget.”

Detrick says that prioritizing funding for a program like NMP makes sure that it’s “not seen as some little experiment that’s being funded on the side. Our support is unwavering, and teachers feel like we have their back and they are valued.”

We highly recommend that the college think proactively about preparing to scale up the project quickly. In the first year of implementation, there should be strategic efforts to involve new people in the work, especially adjunct faculty.

Action Items

Identify the people who will be involved in the work.

- Determine the amount of time, and over what period, they will need to commit to the project.
- Assess if this work falls within their normal duties or if it is appropriate to make an adjustment of workload or offer a stipend.

Consider other resource needs.

- Take into account any travel to training events or visits to other colleges implementing the NMP.
- Identify any needs to prepare for scaling up the project to meet long-term goals.

Dana Center Resources

Resource Allocation: Memo to the Administrative Leadership (Appendix I)

Resource Allocation: Recommendations for Stipends and Work Release (Appendix J)

3 — Schedule Courses

Overview: The leadership team will work with faculty, advisors, institutional researchers, and the registrar to plan for implementation of courses. Organizing for course implementation includes planning realistic goals for the number of sections to be offered, coordinating with targeted programs of study, and making scheduling decisions.

Action Items

Identify the target population for your courses.

- Determine placement cutoffs and other eligibility requirements.
- Determine the alignment of mathematics pathways to programs of study.

Determine the number of sections and schedule for new courses.

- Project the number of eligible students using the Funnel Analysis Example. Use this tool to determine the number of sections that can be filled.
- Identify the faculty capacity for staffing the courses.
- Consider if there are specific time slots that will or will not be used for the courses, sites at which the courses will be offered, etc.
- Consider if the courses require any special facilities. The Dana Center NMP courses will be most successful in rooms that allow for group work.

Schedule sections, rooms, and instructors.

Data Center Resources

- Funnel Analysis Example (Appendix K)
- Dana Center NMP course descriptions (Appendices L–N)

If implementing the Dana Center NMP courses, refer to “Prepare to Teach the Courses: Logistical Planning” (step 4 of “Instructional-Level Work” later in this phase) for information about issues to address.

Institutional research and advising staff will contribute data to inform decisions about target student populations. A funnel analysis is a way to use this data to project the number of students expected to enroll. Questions should be customized based on local eligibility requirements. Each subsequent level of the funnel draws from the students identified in the level above. An example is provided in Appendix K.



Things to Consider

- What is the deadline for classes to be listed in the Fall catalog and placed on the Fall schedule?
- What qualifications must faculty have in order to teach the courses?
- How will you ensure that students are co-enrolled in *Foundations* and *Frameworks*?

4 — Plan Advising and Recruitment

Overview: It is critical that an advising and recruitment plan be implemented early to ensure that the sections of *Foundations of Mathematical Reasoning* and *Frameworks for Mathematics and Collegiate Learning* will have adequate enrollment. Developing and implementing this plan will require collaboration among advisors, institutional researchers, student success faculty, mathematics faculty, and faculty in charge of other majors and programs of study.

Action Items

- Create and implement a recruitment plan, including a timeline.
- Identify the programs of study best suited to the mathematics pathway being implemented.
 - Identify strategies for targeting and marketing to students.
 - Identify materials needed for advising and recruitment.
 - Conduct outreach to and training of formal and informal advisors.
 - Set checkpoints for evaluating progress.

Dana Center Resources

- Mathematics Pathways Transfer Resource (Dana Center NMP website)
- Transfer and Applicability FAQ (Dana Center NMP website)
- Recruitment Plan Template (Appendix O)

Advisors have the primary responsibility for advising and recruitment. The leadership team should collectively identify targeted programs of study and help to identify others who can support the advising staff in the following work:

- Identify which academic and career programs at your institution will accept the different mathematics pathways.
- Engage program leaders in discussions about different mathematics pathways to determine which is most appropriate for their students.
- Programs at major transfer institutions in high enrollment fields should be considered. The Dana Center's *Mathematics Pathways Transfer Resource* provides information on mathematics requirements at many four-year institutions in Texas.
- Work with the institutional research office to identify the possible number of students to recruit.
- Add information about the NMP courses to existing advising tools or develop new ones.
- Train advising staff.
- Develop recruiting materials for students.
- Recruit and enroll students.



Examples from the Field: Advising and Recruiting Students

A math faculty member at Austin Community College taught a sample NMP *Foundations of Mathematical Reasoning* lesson in a current developmental math course and asked the students for feedback. The instructor shared those comments with advisors and counselors, who used them in recruitment materials.

Temple College provides an excellent online resource to educate and recruit students for NMP. The college created a website for student recruitment that answers important questions about the project and gives details on how to register for NMP courses. The website can be found at <http://www.templejc.edu/nmp.aspx>

Lone Star College (LSC)–Kingwood trains all advisors to be knowledgeable about NMP and even has a dedicated advisor, Nicole Foley-Nelson, who registers students for the courses. Ms. Foley-Nelson ensures that the program works with the students' concentration and their plans for transfer. LSC-Kingwood also provides a useful website: <http://www.lonestar.edu/new-mathways-project.htm>

A key strategy in this process is to think about groups of students to recruit systematically, rather than individually. Many students do not seek out advising, and often there is little time for deeply personalized advising during key enrollment periods. Therefore, consider targeting, for example, students in programs that accept a given pathway. Faculty members in these programs are natural allies in the recruitment process. The programs may have their own outreach efforts or informational events that can be used to enroll students in the NMP courses.

Many of the programs that could be served by a statistics or quantitative reasoning pathway, such as liberal arts, fine arts, and social science programs, typically list a variety of mathematics courses that satisfy a core curriculum requirement on their program websites and advising materials. However, many students will default to the first course listed or the course with a title that sounds most familiar. Similarly, many advisors will default to a college algebra recommendation because it has traditionally been the primary mathematics pathway for all students. Therefore, consider making a recommendation of which course is best suited for the program of study or listing the desired pathway first. Another option is to make the desired pathway the default with the option for students to intentionally select a different course. Work with advisors to convey recommendations to students.

Advisors can also look for allies in programs that provide informal advising to students in the target population. These programs can include clubs and services for minority students and veterans, TRIO programs, and programs for high school students. In addition, consider recruiting students who are enrolled in the prerequisite course for *Foundations* and recruiting students who have been unsuccessful in the college's equivalent to Beginning Algebra.

A well-thought-out recruitment plan is critical to successful implementation. A *Recruitment Plan Template* is provided in Appendix O.



Things to Consider

- How can you diversify an outreach campaign to students by using different methods of communication?
- Do programs of study or student support programs have outreach events or platforms that can be used to reach targeted populations of students?

5 — Prepare for Evaluation

Overview: Institutional research staff should begin working early to prepare for evaluation. Data may need to be collected from a variety of sources including faculty, advisors, tutoring centers, and learning support services. Institutional research staff should be prepared to support the planning and implementation of the data collection for these different groups.

Action Items

- Establish baseline data.
- Identify local evaluation questions.
- Prepare a plan to collect data.
 - Develop simple data collection tools for data from stakeholder groups.
- Plan how data will be used and shared.

Dana Center Resources

- Persistence Tool (Appendix E)
- Evaluation Plan Template (Appendix P)

The institutional research (IR) lead on the leadership team will coordinate participation of IR staff at different stages of planning, data gathering, and analysis. Once the courses are implemented, IR staff will support the leadership team, faculty, and staff in the use of data in feedback and evaluation. This support will include leading conversations about the meaning of the data and the questions and answers that arise from the data.

Specifically, institutional research staff will lead the development of the local NMP evaluation plan, which will examine questions of effect, disaggregated by demographic variables and program participation (e.g., academic or career programs that students are participating in), and patterns of persistence and completion. A template for an evaluation plan is provided in Appendix P. The Dana Center *Persistence Tool* can be used to track students' progress through courses over time. An example of the tool is shown in Appendix E. The full electronic template is available on the implementation guide webpage: http://www.utdanacenter.org/nmp/implementation_guide.

It may be helpful to look at local evaluation in the following Texas Higher Education Coordinating Board reports: CBM001 (Student Report); CMB002 (TASP Report); CBM008 (Faculty Report); CBM009 (Graduation Report); CBM00N (Student Number Change); and CBM00S (Student Schedule Report).

Qualitative evaluation may be useful to gain insight into students' experiences. Faculty and/or IR may want to consider conducting student focus groups.

Possible focus group questions:

- How would you describe the *Foundations of Mathematical Reasoning* class to a friend who is going to attend this college?
- Is the *Foundations of Mathematical Reasoning* different from other math classes you have taken? If so, in what ways?
- When you came to college, did you expect to take math classes? What were your expectations?
- Have your feelings about mathematics changed?
- Do you have a desired major or career that you are pursuing? Can you describe how math will be part of your career and work? Your life in general?

Qualitative questions may also be included in occasional writing assignments in class or in final course evaluation completed by students.



Things to Consider

- What is the culture of using data in the college? Who typically has access to data and how are data used?
- How will the data available to institutional researchers and the data available to faculty be shared with the leadership team and with other stakeholders?
- Are there existing processes or structures for discussing data, possibly through other initiatives such as Achieving the Dream? Is there a need to create new processes? Will faculty or staff need training on the use of data?

6 — Plan for Academic Support

Overview: The leadership and instructional teams should plan for how students in the NMP will receive academic support such as tutoring. Because the NMP courses contain different content and a different instructional model than traditional math courses, the resources that are typically available to students may not be appropriate.

Action Items

- Create a plan for academic support for NMP students.
- Provide information and training for tutors and relevant student support programs.

Dana Center Resources

Resources will be developed along with the courses.

The first step in this process is to inventory the current academic support resources and services available to students. These resources may include tutoring centers, online tutoring, tutoring through specialized programs, and supplemental instruction. They may also include services other than tutoring such as support for students with disabilities, computer labs, and technical support.

The communication plan discussed above should include outreach to the faculty and staff in these programs to provide them with general background information about the NMP. Outreach can be followed by discussions with key faculty and staff about which services will be appropriate and useful to students in the NMP courses and whether additional services will be needed.



Things to Consider

- What do tutors need to know in order to tutor students in an NMP course?
- What training will be provided for tutors and support staff?
- Is it possible to have services dedicated to NMP students?
- What services other than tutoring will support NMP students?

7 — Conduct Outreach to External Partners

Overview: The leadership team should consider how the proposed changes will impact partners outside of the college, which may include four-year transfer partners, local K–12 school districts, and other groups that work with the target population.

Action Items

Identify external partners impacted by the changes.

- Determine the appropriate level of engagement and information sharing with each partner.
- Determine the appropriate liaisons and channels of communication.

Dana Center Resources

Course learning outcomes (http://www.utdanacenter.org/nmp/curricular_materials)

Mathematics Pathways Transfer Resource (Dana Center website)

NMP Transfer and Applicability FAQ (Dana Center website)

Outreach to external partners can range from basic information sharing to active engagement in the process. The level of engagement will depend on how much the changes impact the partner and the potential of the partner to impact the project.

Transfer partners are very important to successful implementation of multiple mathematics pathways. You may need transfer partners to make changes to requirements in order to allow alternative pathways. At a minimum, you want to ensure that students are able to transfer credits easily. You may even find programs at the four-year institution that want to endorse or recommend the new courses. Because of the critical role of transfer partners, we recommend involving them early and allowing time for them to learn about the project, including the reasons behind the changes.



Examples from the Field: Reaching Out to External Partners

Lone Star College (LSC)–Kingwood created strategic networks with their transfer partners to build support for the NMP. Kingwood president, Katherine Persson, initiated contact with the president of the University of Houston (UH), Renu Khator. The two presidents arranged for their respective mathematics faculty to connect. Stephanie Doyen, mathematics professor at LSC–Kingwood, invited her UH counterpart to observe a *Foundations of Mathematical Reasoning* class. This experience helped the UH faculty member to understand the goals and purpose of the course in a more meaningful way than by simply reading the course outline and learning outcomes.

Bill Holda, President of Kilgore College, assessed that many small rural colleges in the state, including Kilgore College, do not have a single primary transfer partner. To address this challenge, his strategy was to invite a consortium of two-year and four-year institutions to engage in discussions about NMP, transfer, and program alignment. He invited representatives from Stephen F. Austin State University, Texas A&M Commerce, and the University of Texas at Tyler, and coordinated with Temple College to invite the University of North Texas to participate in the NMP transfer champions initiative. Holda plans to bring more two-year institutions, such as Trinity Valley Community College, into the group to coordinate engagement with four-year institutions in the region.

K–12 partners also have an interest in understanding what is happening with students who are transitioning from high school to college. High school counselors should know that different options are becoming more available for students. Additionally, it is important for high school mathematics teachers to be aware of changes in the college curriculum. This work could impact previous work on K–14 alignment.

Other partners to consider are programs that work with the same target population. For example, some of the Texas colleges also have a Punte program, which supports developmental reading and writing students. This population has an obvious overlap with the developmental mathematics students in the NMP, so it was practical for the two programs to consider how to integrate and maximize the benefits for students.

In all external partnerships, you should plan carefully about how to use channels of communication. It may be appropriate to start at the highest level of communication (i.e., president to president or president to superintendent) to signal the institutional commitment and priorities. The example from LSC–Kingwood in this section illustrates how contact at the presidential level helped establish the faculty connection. In other cases, there may be existing structures or relationships that can be used to facilitate communication.

Instructional-Level Work

The instructional-level work is led by instructional teams for each course and is broken into five categories:

1. Establish the instructional teams
2. Identify obstacles and opportunities
3. Plan instructional-level communication
4. Prepare to teach the courses: Logistical planning
5. Prepare to teach the courses: Instructional planning

1 — Establish the Instructional Teams

Overview: We suggest establishing instructional teams for each new course that is being implemented. These teams should work collaboratively together and should have representatives on the leadership team. They should be tasked with implementing the courses and communicating with colleagues about the project. You may want to consider establishing a cross-disciplinary instructional team to coordinate work across the courses.

Action Items: Instructional Team

Convene the instructional team(s).

- Identify all team members. Members should include all faculty assigned to teach the courses and may include others who will teach in the future.
- Establish individual responsibilities.
- Ensure that each team member reviews the college's implementation plan and this *Implementation Guide*.
- Create an academic year calendar and schedule regular meetings at least twice monthly.

Dana Center Resources

The Dana Center has developed curricular materials and training materials for faculty. General informational materials can be found on the Dana Center NMP website at <http://www.utdanacenter.org/higher-education/new-mathways-project>. The instructional team should contact the Dana Center for access to the full materials.

The instructional team is charged with preparing for implementation of the NMP courses, including:

- Preparing any necessary administrative procedures in the math department.
- Reviewing materials and preparations for teaching the NMP courses.
- Communicating with and engaging colleagues in the math department and departments involved in the student success course. The instructional team should include all faculty who will be teaching the NMP courses—the developmental mathematics course, *Foundations of Mathematical Reasoning*; the student success course, *Frameworks for Mathematics and Collegiate Learning*; and the college-level courses. The instructional team may also include other faculty, if desired. In particular, you should consider whether adjunct faculty or instructors who will teach these courses in the second year. The full team should meet regularly, although the instructors for each course will also need to meet in small groups.

Roles for the instructional team should be clearly defined. At least one member of the team should also serve on the leadership team and should be responsible for communication between the two groups. Other responsibilities to be considered for the instructional team include planning and running meetings, record keeping, and communicating with other faculty.

A key aspect of planning for scale is to plan for the first year of implementation with the second year in mind. As the first implementers begin work, begin recruiting and engaging the next group of faculty who will implement in the following year.



Things to Consider

- What support does the instructional team need in order to prepare? What will it need during planning and implementation? Consider the following:
 - Support for scheduling meetings, paperwork, collecting information, etc.
 - Training
 - Opportunities to visit colleges that have implemented NMP
 - Release time
 - Supplies and technology to implement classroom activities
- How will the team share key lessons and findings with colleagues?
- How will the instructional team include adjunct faculty?
- If there are separate developmental and college-level mathematics departments, how will the departments work together and coordinate work?
- How will mathematics and student success faculty collaborate and coordinate work?
- How and when does the instructional team communicate with the leadership team? Will an individual serve as liaison?

Instructional-level work

2 — Identify Obstacles and Opportunities

Overview: Every college will encounter unique obstacles and opportunities in implementing the NMP. This section discusses department culture, policies, and coordination with other initiatives. This list is not necessarily comprehensive. The instructional team should consider whether other local issues have the potential to affect the NMP implementation.

Action Items: Instructional Team

Identify obstacles and opportunities.

- Create plans to address obstacles and capitalize on opportunities.

Dana Center Resources

NMP Curriculum Design Standards (Dana Center NMP website, http://www.utdanacenter.org/nmp/curricular_materials)

Many community college math and student success departments have various projects or initiatives that are focused on specific types of reform efforts or special populations. These initiatives may have broad departmental ownership, or they may be the domain of a few faculty members. The instructional team should inventory these initiatives to identify commonalities or inconsistencies with the NMP.

In the case of commonalities, there may be opportunities to collaborate or leverage resources. In the case of inconsistencies, the team should address what this means for the NMP and whether the projects can coexist within the department. In either case, the team should consider whether there are opportunities to collect common data to allow for comparisons between the projects.

Successful implementation of the NMP will require a culture of collaboration and evidence-based practices. Faculty must agree to use common materials and assessments, engage in professional learning opportunities across disciplines, and use data to improve instructional practices. The culture of the department may provide an opportunity to build upon existing relationships and processes, or it may be an obstacle that will require careful planning to overcome.

If your college has separate departments for developmental and college-level mathematics, you will need to consider the culture of each department and plan for addressing any cultural differences. The departments will need to establish a close working relationship to collaborate on the NMP. It is important not to rely on communication among a few individuals.

As the instructional team members become familiar with the details of the NMP curricular materials, they should identify any departmental policies that may conflict with the NMP. They can begin by reviewing the *NMP Curriculum Design Standards*, available on the Dana Center website. If such conflicts exist, consider whether making exemptions for the NMP courses or changing applicable policies would be appropriate.



Things to Consider

- Who are the influential members of the department(s) who can help support successful implementation?
- What existing natural networks can be used in problem solving and building support?

Instructional-Level work

3 — Plan Instructional-Level Communication

Overview: While the leadership team is charged with college-level communication, the instructional team should plan for communication at the department level. Carefully planned departmental-level communication will build buy-in and support for the project and will lay the foundation for recruiting more faculty as the project scales up.

| Action Item |
|---|
| Create and implement an instructional-level communication plan. |
| Dana Center Resources |
| Communication Plan Template (Appendix G) |

The instructional-level communication plan should account for different information needed by different faculty sub-groups. For example, mathematics faculty who do not teach developmental or gateway mathematics courses should be familiar with the project, but they do not need the detailed information necessary for faculty who will be expected to teach the NMP courses in the future. The learning frameworks course may be taught by faculty and staff from multiple departments, which represents a different set of challenges. The *Communication Plan Template* in Appendix G can guide the planning process.

The instructional team should also consider whether there is a need for outreach to the client departments of specific math courses. For example, departments that require statistics have a special interest in the statistics pathway. Faculty in STEM departments may have concerns that the mathematics content for their students will be changing in the near future.

Plan how to disseminate information so that others are aware of and feel that they are part of the work. The team will need to actively engage and involve colleagues, particularly adjunct faculty, in the NMP. Do not rely on passive forms of communication such as email. Especially think about ways to connect faculty to students. Connecting the work to students helps people with disparate views find common ground. Some strategies to consider are listed below.

- Organizing discussion groups around lesson materials, classroom video, or student work or interviews.
- Conducting a fish-bowl exercise at instructional team meetings (e.g., observe the instructional team in a planning process and then discuss).
- Establishing protocols for classroom observation and debriefing a lesson.

The team may want to use the *NMP Curriculum Design Standards* as the starting point for communicating with and engaging faculty. Using these standards would provide an opportunity to promote discussion, identify concerns, and gather information about the needs for training and more information.



Things to Consider

- What information do math and student success faculty need?
- What departments are affected by the NMP?
- How can existing structures (e.g., department meetings, newsletters, workshops) be used to support communication and collaboration? Is there a need for new structures?
- Do these strategies reach adjunct faculty? Is there a need to create structures specifically for reaching adjunct faculty?
- What opportunities for active involvement are provided?
- On multi-campus colleges, do faculty from all campuses meet together? If not, is there a need to establish multi-campus meetings?

4 — Prepare to Teach the Courses: Logistical Planning

Overview: There are a number of logistical decisions to be made regarding how the Dana Center NMP courses will be implemented. These issues are outlined below. Instructional teams are encouraged to communicate with the Dana Center staff and/or faculty at codeveloper colleges to discuss the ramifications of various options.

Action Items

Determine how courses will be listed in the catalog (deadline determined by local scheduling).

- Learning frameworks can be cross-listed as EDUC and PSYC.
- Identify course number for *Foundations of Mathematical Reasoning*.
- Schedule instructors for Fall semester.
- Coordinate with leadership team on details of scheduling, catalogs, rooms, etc.
- Order supplies and materials for class activities.

Dana Center Resources

Course descriptions for *Foundations of Mathematical Reasoning*, *Frameworks for Mathematics and Collegiate Learning*, and *Statistical Reasoning* (Appendices L–N)

Learning outcomes and course outlines are available on the NMP website:
http://www.utdanacenter.org/nmp/curricular_materials

A few logistical decisions should be made regarding the courses designed by the Dana Center. Some of these decisions are specific to Texas. The course descriptions in Appendices L–N will help inform these decisions.

***Foundations of Mathematical Reasoning* (described in Appendix L)**

- *What is the name and number for the course offering?:* *Foundations* is a developmental course and will be numbered according to your local system for developmental courses. With the exception of Intermediate Algebra, developmental math courses do not have standard outcomes and course numbers listed in the *Texas Academic Course Guide Manual* (ACGM) at this time.
- *What will the credit/lab hours be?:* Colleges may use a combination of credit and lab hours to comprise the 4 contact hours required for the course.

***Frameworks for Mathematics and Collegiate Learning* (described in Appendix M)**

- *How will the course be listed?:* In Texas, institutions have the discretion to list the course under either Psychology (PSYC 1300) or Education (EDUC 1300), or to cross-list the course under both headings. We generally recommend cross-listing the course to increase

the likelihood that a variety of programs of study will accept it and to ensure that both education and psychology faculty can teach the course. Some colleges may choose to offer the course for developmental credit.

- *Will there be prerequisites?:* The Dana Center recommends that there not be a college-level reading prerequisite unless it is required by institutional policy. If required, then we encourage institutions to consider allowing the reading course to be taken concurrently with the *Foundations* course. Colleges may choose to restrict students who place at the lowest reading level from the NMP courses.
- *Will the course be eligible for financial aid?:* In order for the *Frameworks* course to be eligible for financial aid, it must be included in at least one degree plan at the college, or it must be an institutional requirement. The course can be a general requirement or a specific degree requirement.

Co-requisite offering of *Foundations* and *Frameworks*

- *Will there be exceptions?:* The *Foundations* and *Frameworks* courses are designed to be taken concurrently. In some cases, this co-requisite offering may restrict students from taking the *Foundations* course if they have already taken a learning frameworks course. Consider if it is appropriate to allow these students to take the *Foundations* course.
- *What are the policies about withdrawal?:* Decide on the policies regarding students who wish to withdraw from one course, and students who fail one course but pass the other.
- *How will you structure the co-requisite?:* Decide if *Foundations* and *Frameworks* will be offered as a learning community cohort, which can be a powerful model. However, it may restrict the ability to offer the program at scale because it is more difficult for students to schedule the two courses. Your team may return to this issue as you scale the number of sections at your college.

Statistical Reasoning (described in Appendix N)

- *How many credits will the course have?:* The *Statistical Reasoning* curricular materials meet the ACGM guidelines for Math 1342 for 3 credits and Math 1442 for 4 credits. The Dana Center recommends the 4-credit option. The college will need to decide which option to offer.



Things to Consider

- What qualifications and experiences will a faculty member need in order to teach each course?
- What types of scheduling options will be used (e.g., number of class meetings per week, length of class sessions)? Will there be one format for all sections?
- How will the course listing of *Frameworks* as EDUC and/or PSYC affect who can teach the course?



- How will the developmental math course be numbered?
- How much release time will be given to instructors?
- Colleges may not want to consider using a common curriculum across all learning frameworks courses. If the college has an existing learning frameworks course, the faculty may want to conduct a crosswalk comparing the two courses. This comparison can lead to a process of creating a local course that draws from both the NMP curricular materials and the local curriculum.

5 — Prepare to Teach the Courses: Instructional Planning

Overview: It is important to create specific structures and processes to support collaboration within the instructional team, both within and across courses. If there are faculty who teach only in the Spring semester, they should take an active role throughout the planning and implementation process. Similarly, faculty who teach only in the Fall should continue to have a role through the Spring. This type of involvement does not mean that every faculty member needs to participate in every meeting or activity, but that there should be regular and strategic points at which they engage with the work.

Action Items

Identify instructors for all courses and any other instructors who will be involved in preparing to teach.

- Plan for collaboration in preparing to teach and while teaching.
- Create a plan for becoming familiar with the curricular materials.
- Attend trainings with the Dana Center.

Plan for the academic term.

- Create a common syllabus and course schedule.
- Set common policies.

Plan for collaboration across instructional teams.

- *Frameworks* and *Foundations* faculty will need to do some joint planning to discuss the alignment of the courses. Each instructional team can provide an overview of the course to the other team.
- *Foundations* faculty should also work with faculty teaching the college-level courses.

Dana Center Resources

Contact the Dana Center about training opportunities and materials.

As described in the section on the communication plan, engaging faculty beyond those in the instructional team is key to the eventual success of the NMP. You may consider engagement at the course level by identifying a few “shadow instructors” for each course. These types of structures depend on realistic and clear expectations for involvement (e.g., joining the instructors for planning sessions on a regular basis, reviewing course materials, regularly observing the classroom).

The instructional team will also need to prepare for collection of classroom data and identification of ways to link with institutional data. These tasks should be done in collaboration with the leadership team and institutional research staff.



Example from the Field: Connecting the Mathematics and Learning Frameworks Courses

Alma Brannan and Mindy Flowers, instructors at Midland College, worked together to maximize the impact of their two courses. They shared that “students became a cohort and held each other responsible.” Below are the instructors’ recommendations based on their collaboration .

1. Meet before you begin teaching on several occasions to set up classroom rules and guidelines. It makes it easier for the students if we both play by the same rules.
2. Plan out as many “linked” activities as possible. We each referred to each other’s lessons and way of teaching. We discussed how other courses are taught so our students got a real feel for college.
3. Have both instructors attend both classes for the first day or couple of days. It shows unity and team work. Students knew we talked and our goal was to help them be successful.
4. Meet weekly to discuss curriculum, strategies, and individual students. We referred students to appropriate resources based on our discussions.
5. We were a TEAM.



Things to Consider

- What preparation will faculty need in order to teach the courses in terms of content and pedagogy?
- How will faculty who are not teaching the courses be involved?
- What supports will faculty receive?
- How will the instructors collaborate within and across courses?
- Are there ways that faculty can share responsibilities for preparing to teach?
- How will the NMP learning frameworks course intersect with or affect other student success courses at the college? How will it intersect with or affect other student success programs (e.g., orientation, study skills workshops, and services for special populations)?

Need Help?

Would you like to talk with Dana Center staff or colleges that have implemented the NMP?

Contact us at
mathways@austin.utexas.edu.

Appendices

All appendices can be found on the implementation guide webpage:

http://www.utdanacenter.org/nmp/implementation_guide

| | |
|-------------|--|
| Appendix A: | The NMP in Texas: Active-Learning Sites and Capacity-Building Sites |
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Appendix A: The NMP in Texas: Active-Learning Sites and Capacity-Building Sites

Background Information

The New Mathways Project (NMP) is a systemic approach to improving student success and completion through implementation of processes, strategies, and structures based on four fundamental principles:

1. Multiple pathways with relevant and challenging mathematics content aligned to specific fields of study
2. Acceleration that allows students to complete a college-level math course more quickly than in the traditional developmental math sequence
3. Intentional use of strategies to help students develop skills as learners
4. Curriculum design and pedagogy based on proven practice

Through a joint enterprise with the Texas Association of Community Colleges (TACC), the Dana Center has received the support of all 50 community college districts in Texas to develop the NMP.

In addition to close collaboration with college administrators, faculty, and staff, we work with state-level leaders to make recommendations for coherent policies and practices to support the principles of the NMP. These recommendations specifically address issues such as legislation, placement, articulation, and funding. This work includes outreach to four-year institutions in Texas. Our work will provide a model for similar initiatives in other states. Through this joint enterprise, we have set ambitious goals for implementation of the four fundamental principles:

Spread of implementation at the state level: Within 5 years, 75–100 percent of colleges will implement at least two NMP pathways and maintain the innovation for at least 5 years.

Depth of implementation at the institutional level: Within 5 years after initial implementation, at least 25–50 percent of developmental mathematics students will be in an NMP pathway.

What Does Implementation Mean?

The NMP is both a model for reform and a set of specific tools and services. As a model, the project is based on the four principles listed above, which can be implemented in a variety of forms. We define implementation of an NMP pathway as institutionalizing a structure that meets NMP's four principles and is informed by active faculty participation in the project.

The Dana Center develops a number of resources that colleges can use to support this work. These resources include implementation tools, data templates, faculty and staff training, and curricular materials for courses. *There is no expectation that colleges have to use these specific resources.* The Dana Center's goal is to support colleges in making good, informed decisions based on their local needs. We offer support through planning tools, offering technical assistance, and connecting colleges to share local learning and expertise.

The Dana Center’s approach to developing curricular materials and services uses a development process that provides many opportunities for faculty to review and give input. Even colleges that do not intend to use the specific NMP curricular materials are encouraged to participate at some level for two reasons:

1. Input from a broader population improves the products.
2. The process of working with faculty from other institutions and engaging in this development informs their own reform efforts and strengthens the reform efforts statewide.

Working at Scale in Texas

Implementing the NMP at scale across Texas is critical—we must ensure that reform does not create a system of haves and have-nots. To enable participation throughout the community college system, we have worked with TACC to establish three development and implementation roles that provide all the colleges an opportunity to connect with one another and participate based on their own capacities and needs. The roles are described below.

Codeveloper colleges work closely with TACC and the Dana Center on the complex task of reengineering developmental mathematics and the gateway courses that are critical to student completion. Nine institutions have been selected as codeveloper colleges based on an application process: Alamo Colleges–Northwest Vista College, Austin Community College, Brazosport College, El Paso Community College, Kilgore College, Lone Star College–Kingwood, Midland College, South Texas College, and Temple College.

Active-learning sites will implement the NMP in one to two years. Typically, these institutions have already started reform efforts and have built some level of faculty awareness and support. As active-learning sites, they are partnered with one of the codeveloper colleges in a mentoring relationship. This approach enables the active learners to observe the implementation process and receive support for their own planning. Some active-learning sites are already working on home-grown initiatives that are aligned with the NMP principles. The NMP serves as a vehicle to share information about these different reform efforts. Active-learning sites have committed to supporting time and resources for faculty to make site visits to codeveloper colleges and to help disseminate information. The Dana Center established the Mentorship Program in Fall 2013.

Capacity-building sites will implement the NMP in three to four years. Faculty at these institutions often have not had many opportunities to learn about the principles behind the NMP. The Dana Center will provide materials for an outreach campaign to inform the faculty and provide opportunities for them to engage in the statewide conversation with their peers at other institutions. Capacity-building sites have made a commitment to identify liaisons with whom the Dana Center can communicate and to hold at least one event a year to disseminate information to faculty and staff.

This distinction between the NMP model and the NMP materials causes some confusion. The following examples demonstrate how colleges could take different approaches to implementation with different levels of involvement.

Example 1: A college decides that its students will be best served by two pathways: quantitative reasoning and STEM preparation. As an active-learning site, administrators and faculty consult with a codeveloper college on strategies for effective implementation. The faculty participate in selected NMP materials development and professional learning opportunities. This involvement helps them develop their own courses in line with the four NMP principles. Faculty choose not to use the Dana Center’s curricular materials but decide to use some of the faculty training materials.

Example 2: A college decides it will implement the Dana Center’s design for three pathways using the Dana Center curricular materials. Through mentorship with a codeveloper college and collaboration with other active-learning sites, multiple colleges plan common faculty training and work together on implementation plans. The college faculty are deeply involved with the development of course materials and faculty training. Faculty leaders take roles as trainers and help support implementation at other institutions.

Shaping the Policy Environment

Working at scale requires attention to the policy and system-level factors that may inhibit institutional change. Individual colleges are not typically in the position to tackle potential policy obstacles to reform such as articulation, placement, and accreditation. Nor are state-level actors positioned to work on issues of content and courses. One of the greatest strengths of the TACC–Dana Center enterprise is its ability to address issues that require state-level coordination based on input from people at all levels of the system. Together we are working with the Texas Higher Education Coordinating Board to identify potential obstacles to scale. We have initiated an outreach campaign to four-year institutions in the state with the support of the University of Texas System, which includes meeting with presidents, provosts, and mathematics faculty.

More Information

More details about the NMP work are available at <http://www.utdanacenter.org/mathways>. This website will be periodically updated to provide specific information about the project in Texas, including a timeline for curriculum development, dates when materials will be available for public review, details of our plan for outreach to four-year institutions, and tools that colleges can use in their own work.

To receive monthly updates on the NMP, including notices of when new information is posted on the website, contact us at mathways@austin.utexas.edu.

Appendix B:
Sample Implementation Plan for Phase I and Phase II
(McLennan Community College)

| Date | Activity | Group Involved |
|---------------|--|---|
| November 2013 | Establish the Leadership Team | Instructional Administrators, Advising, Faculty |
| December 2013 | Determine Team Chair, tentative meeting schedule, first meeting agenda | Leadership Team |
| January 2014 | Leadership Team first meeting; determine plan for dissemination of NMP info to stakeholders; meet with all instructional program directors and coordinators; meet with advisors to discuss NMP and its implications for advising; meet with Faculty Instructional Team to establish plans and timeline for preparation to teach NMP courses; establish baseline data year as fall 2012–spring 2013; begin collecting necessary data (fall 2010–spring 2012) from Developmental Math program; meeting with Temple College NMP team, January 17; monthly progress report | Leadership Team, Advisors, Program Directors/Coordinators, Faculty Instructional Team, institutional research |
| February 2014 | Continue data collection; meet to discuss data and make analysis; obtain baseline data from gateway math courses; compare our EDUC/PSYC 1300 with the Learning Frameworks course of NMP; determine if we can use our EDUC/PSYC 1300 in NMP; establish professional development training for faculty teaching Frameworks course; professional development training for faculty to use problem-based (application-driven) teaching and learning; monthly progress report | Leadership Team, Advisors, Faculty, Professional Development Trainers, Institutional Research |
| March 2014 | Prepare and disseminate the developmental math baseline data; review and analyze the data from gateway courses; continue professional development for faculty regarding problem-based learning and teaching; faculty obtain modules to use for Learning Frameworks course; faculty obtain modules for Developmental Foundations course for Statistics; monthly progress report | Leadership Team, Institutional Research, Professional Development Trainers, Faculty |
| April 2014 | Faculty Instructional Team meets at least twice during the month to discuss teaching Foundations for Statistics course (review NMP modules); faculty meet with advisors at least twice to discuss teaching modules for Frameworks course; establish a committee to begin planning for marketing NMP program and recruiting students; determine “profile” for students who can be successful in NMP; make another trip to Temple College; monthly progress report | Leadership Team, Advisors, Faculty |
| May 2014 | Faculty Instructional Team meets once to continue review and discussion of teaching modules for Foundations course; faculty and advisors meet once to continue discussion of teaching modules for Learning Frameworks course; finalize a plan of | Leadership Team, Advisors, Faculty, MARCOM (Marketing and Communications Office) |

Appendix B: Sample Implementation Plan for Phase I and Phase II (McLennan Community College)

| Date | Activity | Group Involved |
|-----------|--|---|
| | marketing and recruitment; faculty continue reviewing teaching modules for Frameworks and Foundations courses; Leadership Team plans for summer activities; monthly progress report | |
| June 2014 | Implement marketing and recruitment plan for NMP; advise and enroll students for NMP; faculty discussion meetings (at least two) for teaching Learning Frameworks modules; one faculty discussion meeting on teaching modules for Foundations course; additional professional development training for teaching/learning with problem-based learning approach; develop plan for data collection and analysis during NMP project; telephone conference with Temple College Leadership Team; monthly progress report | Leadership Team, Faculty, Advisors, Institutional Research, MARCOM, Professional Development Trainers, Temple College Leadership Team |
| July 2014 | Continue marketing and recruitment; advise and enroll students in NMP; professional development training for learning/teaching with problem-based approach; discussion sessions involving advisors and faculty for Frameworks course; Temple Leadership Team visits our campus; faculty discussion sessions on Foundations teaching modules; monthly progress report | MARCOM, Institutional Research, Advisors, Faculty, Professional Development Trainers, Leadership Team, Temple College Leadership Team |
| August | Continue marketing and recruitment; advise and enroll students in NMP; update/modify data collection plan; meet with personnel at Mathways (Dana Center), either travel to Austin or have them come to our campus; faculty finalize teaching modules for Frameworks course; faculty finalize teaching modules for Foundations of Statistics course; monthly progress report | MARCOM, Institutional Research, Faculty, Advisors, Leadership Team, Mathways Personnel |
| | Begin teaching two sections each of Learning Frameworks and Foundations of Statistics | |

Leadership Team Meetings (Tentative)

| | |
|-------------|----------|
| January 24 | 10:00 am |
| February 28 | 10:00 am |
| March 28 | 10:00 am |
| April 25 | 10:00 am |
| May 22 | 10:00 am |
| June 26 | 10:00 am |
| July 24 | 10:00 am |
| August 22 | 10:00 am |

Appendix C: Sample Implementation Plan for Phase I and Phase II (Tarrant County College)

Tarrant County College Proposed NMP Timeline (2013–2015)

| Date | Task | Project/task Lead | Goal | District / Campus Units Involved |
|-------------------|---|---|--|---|
| November 27, 2013 | Submit timeline to Dana Center | Academic and Math Leads | Meet program requirement: timeline/calendar | District office and SE campus |
| December 2013 | Replace AVC for College Readiness with alternate designee | VC for Academic Affairs | Have a solidified NMP team by January 2014 | VC for Academic Affairs |
| January 2014 | Regroup and debrief | NMP Academic or Math Lead Person | (1) Review of November mentor session (phone conference), (2) review proposed timeline, (3) agree upon team's membership consistent meeting dates, and (4) determine what members will visit mentor site in Spring 2014. | All NMP team members |
| Spring 2014 | Discuss and select preferred date for site visit | NMP Academic or Math Lead Person and Austin CC (mentor) | (1) Learn programmatic, logistical, and other NMP related details first--hand, and (2) prepare a report for sharing with district offices, as well as other NMP team members, following the first visit to NMP site. | Selected/volunteered site visitation team |
| Spring 2014 | Provide campus leadership an update on the NMP | NMP Academic Lead | (1) Inform campus presidents and academic council of the project's development, (2) share similar details with student development departments, and (3) obtain consent from presidents in regard to marketing piece of program. | Academic, Math, and Student Services leads |
| Apr to May 2014 | Implement a district--wide NMP communication plan | Team elected/recommended member(s) | (1) Begin the development of a communication plan, (2) identify funding source to support NMP marketing and communication efforts, and (3) designate a lead contact to interact on a consistent basis with TCC's marketing dept. | NMP Communication Team and TCC's Marketing Dept. Director and Staff |

Appendix C: Sample Implementation Plan for Phase I and Phase II (Tarrant County College)

Tarrant County College Proposed NMP Timeline (2013–2015)

| Date | Task | Project/task Lead | Goal | District / Campus Units Involved |
|-----------------------------|--|---|--|--|
| March to May 2014 | Determine required data | NMP Math Lead | (1) Identify appropriate data needs to implement and sustain NMP project, (2) address duplicating or conflicting efforts, (3) confirm math pathways for students, and (4) consult mentor college prior to recommending "next steps" to presidents and VC for Academic Affairs | NMP Team and Institutional Research Dept. |
| Late Spring and Summer 2014 | Curriculum and Instruction NMP Course Submission | SE Math Division | Gain district (i.e., academic affairs) approval to implement NMP coursework: to include EDUC/Psych 1300. Courses to be made available to students in Fall 2015. Also gain approval for math course creations/changes (if necessary). | SE Math Division in consultation with NMP Team |
| Summer 2014 | Develop Professional Development Plan for NMP instructors | NMP Team, in collaboration with Math Council, Math Academic Curriculum Team, and Other units (e.g., student affairs, enrollment services, etc.) | Design and develop a professional development plan to support NMP instructors and other campus district units. | Assigned task force or committee |
| Fall 2014 | Review of NMP status, in preparation for start date: F2015 | NMP Team | Confirm the status of all program components (e.g., Phases I-III, adherence to NMP implementation guidelines, data, curriculum, instruction, training, facilities, etc.) and plan accordingly for program's start date. Utilize Math Emporium format/plan to help strengthen the implementation of new initiative (i.e., NMP). Review course sequences and cut off scores. | NMP Team in collaboration with SE campus leaders |

Appendix C:
Sample Implementation Plan for Phase I and Phase II (Tarrant County College)

Tarrant County College Proposed NMP Timeline (2013–2015)

| Date | Task | Project/task Lead | Goal | District / Campus Units Involved |
|-------------------|--|----------------------------|--|--|
| Spring 2015 | Implement Training/professional development sessions | NMP Subcommittee | Begin trainings of NMP faculty and personnel. | NMP Subcommittee with assistance from Dean of the Faculty Office |
| Summer 2015 | (1) Continuation of trainings, and (2) final preparations for implementation | NMP Team and subcommittees | TBD | NMP Team |
| August 2015 | Implementation of NMP program | SE Campus | Full implementation of NMP math program. | SE Campus Math Division District Offices (e.g., Academic Affairs, Dean of Faculty Office, IRPE, and Mrktg & PR). |
| Mid--fall 2015 | Formative Assessment | NMP Team | (a) Assess program implementation [phase I], (b) adjust its components, as necessary, (c) analyze current and available data, (d) formalize plans for additional data collection and analysis, and (d) plan for summative evaluation of program. | NMP Team and SE campus |
| Early Spring 2016 | Summative Assessment | NMP Team | Conduct a full assessment of the NMP program, using the Math Council's proposed instrument and criteria. | NMP Team and SE campus |

Appendix D: Redesign Readiness Worksheet¹

The purpose of this worksheet is to help identify the current state of readiness for redesign by providing guiding questions for various stakeholder groups. Each group listed below should be responsible for completing a portion of the worksheet:

PART A:
Academic Affairs

PARTS D, E, F:
Academic Affairs, Student Affairs, Math Dept.

PART B:
Mathematics Department

PART G:
Academic Affairs—Institutional Researcher

PART C:
Student Affairs

After groups complete the sections, the results should be shared with the full team.

The worksheet was designed to be used in a workshop setting in which each group works on its section for a limited time (e.g., 30 minutes). This approach can be an effective way to start a conversation and set the stage for more in-depth work by identifying areas in which the team wants to gather more information. The worksheet can also be used as an assignment that groups work on over time and report on more fully.

We encourage users to adapt the questions and sections to fit the local needs and structures.

¹ This *Redesign Readiness Worksheet* was revised from a tool developed by Janette Miller, Developmental Math Coordinator, University of Wisconsin–Sheboygan, and is based on the Dana Center’s 2012 New Mathways Project Implementation Guide, Version 1.2. We thank Ms. Miller for sharing this resource and for granting us permission to include it in the current version of the implementation guide.

Appendix D: Redesign Readiness Worksheet

PART A: Administrative Support, Campus Culture, Enrollment and Crediting Policies for Developmental Math and/or General Education Math Courses

Administrative Support:

Prior to embarking on a redesign project, you should clarify your current level of administrative support. The questions below are questions you should articulate or at least make redesign team members aware.

- a. What is your campus' mission and priorities with regard to developmental mathematics or general education math courses (e.g., student success, retention, accreditation) and how might a redesigned approach fit into furthering that mission or achieving those priorities?
- b. What campus resources are available for facilitating a redesign initiative (computers, space, funding, etc.), what is the capacity of those resources, and who manages the resources?
- c. What reports or information can the administration disseminate to redesign team members to help them implement a redesign, and can that information be provided to team members in a timely fashion prior to the implementation phase?
- d. In what ways can the administration support the planning and implementation phases of redesign so that the process can move forward in an effective and successful manner? That is, in what ways can the administration assist the redesign process so that the project maintains priority and visibility?
- e. Are there any other campus initiatives or institutional projects that might interfere or compete for resources that may be tagged to support a redesign effort?

Campus Culture:

The culture of the campus and the culture within the math department can be instrumental in either supporting a redesign or being an obstacle. Knowing upfront the culture you are working within may help you form a plan that will be effective on your particular campus.

- a. Describe your campus' culture for innovation.
- b. Describe any campus efforts or initiatives that have been successful. What was the definition of success and what were the general characteristics of those successful programs?
- c. Describe any efforts that have not produced positive effects or not served a significant number of students. Describe any efforts that may have been tested but did not go forward to get established. What were the lessons learned?
- d. What is your campus' capacity for innovating? Are you currently innovating on your campus? Are too many innovations occurring at the same time that may be fragmenting the campus' focus and energy?

Appendix D: Redesign Readiness Worksheet

- e. What are your campus' resources and capacity? Do you have an institutional research office that will provide data and who is also willing to provide that data in a report form so you can share? Do you have an Information Technology capacity so that classes can be scheduled in computer labs? Do students have access to computers? Are there resources available for faculty development and/or training?

Enrollment and Crediting Practices for Developmental Math and/or General Education Math Courses:

Undertaking course redesign will bring about the need for flexibility and/or creative approaches to navigating through existing institutional advising, enrollment, and course crediting practices. Making sure that enrollment and crediting practices are considered will be of primary concern. Thus, it is important to establish a line of communication between the redesign team and the various departments that work with students.

1. Outline any special enrollment and crediting policies at your institution that are in place for students who are enrolled in developmental or general education level mathematics courses.

| ENROLLMENT PRACTICES | CREDITING PRACTICES |
|----------------------|---------------------|
| | |

2. Specify the policy (or policies) with regard to each of the following:
 - a. Allowing for late enrollment towards the end of the semester.
 - b. Granting course credit for a course added late in the semester and for which the student was not originally enrolled, or granting a waiver for a prerequisite course, should a student in a redesigned course finish the objectives for two courses in a given semester.
3. Please specify any immediate issues/concerns/questions your institution may have regarding the potential impact a redesigned course structure might have on enrollment, course crediting practices, and tuition?

Appendix D: Redesign Readiness Worksheet

Part B: Mathematics Department Culture and Impact on Department Resources/Planning (for the developmental and college-level math departments, if separate)

Department Culture:

- a. How does your math department make a decision about incorporating new teaching approaches or new programming?
- b. Are there policies, institutional or departmental, that affect instruction, assessment, or grading and would any of these policies affect a redesigned course?
- c. What are the class size requirements for developmental/general education courses that might impact decision making for a redesigned course?
- d. Are there any costs that are evident with implementing a redesigned course?
- e. Are there any other innovations going forward in the math department? More specifically, does the math department have a culture of collaboration? For example, are there courses that have been standardized with common textbooks and assessments? Does the department incorporate practices such as learning communities, supplemental instruction, or learning skills courses? If so, are these programs department-wide or only the domain of a few interested faculty members? How do you think the math department will respond to a redesign initiative?
- f. Will there be enough qualified instructors with the appropriate knowledge to teach the redesigned course(s)?
- g. Does the math department have a record of participating in educational reform? Does the department work collaboratively with other departments at other colleges or local high schools? Is the department connected on campus with other departments? Are the faculty connected and do they look for new ideas within the department and outside the department?

Impact of Redesign on Math Department Resources and Planning:

To determine the impact of redesign on your math department's resources and planning protocols, the following questions should be considered:

- a. How is the math department organized? Is there a separate developmental math/general education math department? If so, how are those departments organized?
- b. Do faculty members teach both developmental or general education math courses and college-level classes? Are there any issues that should be kept in mind if faculty members teach the developmental/general education courses?
- c. Do adjunct instructors or graduate students teach developmental or general education math courses? If so, are there special considerations of any kind that need to be considered?

Appendix D: Redesign Readiness Worksheet

- d. Are all developmental or general education math courses taught using the same textbooks or the same teaching protocols? Are common assignments, assessments, or exams used for developmental or general education math courses? If not, would there be any problems that may arise if protocols changed?

Part C: Student Affairs Practices on Your Campus

Undertaking course redesign will bring about the need for flexibility and/or creative approaches to navigate through existing institutional advising, enrollment, and course crediting practices, as well as determining any effects on student financial aid and veteran’s benefits.

Advising, financial aid, and veterans benefits policies:

1. Outline current advising, financial aid, and veterans’ benefits policies and/or practices at your institution as they regard developmental or general education level mathematics courses.

| ADVISING | FINANCIAL AID | VETERANS’ BENEFITS |
|----------|---------------|--------------------|
| | | |

2. What would be the impact on student financial aid or veterans benefits if the institution decided to grant credit for a course that was not included in the student’s original schedule of classes (this situation might arise for a student who accelerated through a redesigned course, finished it early, and then finished a second course by the end of the semester)? If there would be an impact, can you think of any mechanism already in place or some practice that could be utilized that would allow you to accommodate this situation?
3. Please specify any immediate issues/concerns/questions that individuals at your institution may have regarding the impact of a redesigned course structure on advising practices, effect on a student’s financial aid status, or a student’s veterans benefit status?

Appendix D: Redesign Readiness Worksheet

Part D: Obstacles to the Redesign Process

There will be barriers to the redesign process that you will encounter. If all stakeholders can identify in advance barriers that may impede progress, cause disruption, or impede momentum of a redesign, you are more likely to be able to find workable solutions effectively to avoid issues. Thus, you will want to consider what kinds of barriers or obstacles your redesign team might encounter on your campus, who might be best able to anticipate these obstacles, and who should be able to take the necessary actions to address the obstacles?

- a. Who or what might be able to stop a course redesign by action or lack of action?
 - At the department level? *What should be the response?*
 - At the campus level? *What should be the response?*
 - Beyond the campus level? *What should be the response?*
- b. Are there any “words of wisdom” that you should be aware of regarding implementation of previous redesign efforts on your campus or from other institutions?
- c. Are there any campus investments or initiatives that a course redesign could displace?

Part E: Key Personnel and/or Departments on Campus to Contact

There will be other departments on campus that will be involved and will need to be consulted and/or kept apprised of the redesign progress in order to ensure considerations and/or policies are followed. The table below should provide a list of partners or allies that will form the campus network and thus bring together all the different perspectives to be considered.

| Partners/Allies | Department | Involved vs. Aware | When will this partner/ally become involved/aware? | Why is this partner/ally involved/aware? |
|-----------------|------------|--------------------|--|--|
| | | | | |
| | | | | |

Notes:

Appendix D: Redesign Readiness Worksheet

Part F: The Redesign Team Membership

Establishing the redesign team is a very important first step to a successful reform effort. The representatives on the team will be making collective decisions about what the redesigned courses will look like and will be key players in accomplishing the actual work of implementation.

So, it is important to consider a cross-disciplinary approach to establishing membership for the team. Groups you may consider including on the team: math faculty/instructors; advisors or counselors; deans or other administrative personnel (e.g., department chairs, provost); institutional researcher(s); math education personnel (e.g., developmental reading instructors, learning skills instructors); Learning Center staff members; and a student representative. The redesign team membership, of course, will in large depend on what type of redesign you are considering and the extent to which you may want to expand your reform efforts.

Some preliminary questions you may want to ask yourself before putting the team together:

1. What individual(s) will be responsible for identifying the team membership? (Note: This person or group of people must be fully committed with the redesign concept and have a good relationship with colleagues).
2. Who will lead the team meetings, set agendas, and take responsibility for communication?
3. Is there any kind of support mechanism that can be used to help the team during the planning and implementation phase (e.g., clerical support, websites, intranet sites)?
4. Can the team engage student representatives to get their input and perspectives on the redesign process?
5. Will there be any funding available to the team membership to provide release time, or perhaps stipends? If not, how might team members be compensated for their time spent on the redesign initiative?

List some possible team members, with their titles/position, department, and the role you feel they may play in the process.

| Name | Title/Position | Department | Role/Responsibilities |
|------|----------------|------------|-----------------------|
| | | | |

Once the team membership has been decided and other stakeholders identified, establish some timelines for redesign team meetings with corresponding milestones to be accomplished that will move the planning phase along in a timely fashion. Make sure that all team members understand the following:

- How the redesigned course will be different from current approaches being taken on your campus.
- Any negative or opposing views regarding the redesign.

Appendix D: Redesign Readiness Worksheet

- How the redesign will impact students from a learning perspective and instructors from a teaching perspective.
- Any implementation issues that may arise in the new redesigned course(s) and what solutions might be used to address those issues.
- Any information regarding campus culture, department culture, administrative resources, and obstacles should be shared with the redesign team members.

Notes:

Part G: Institutional Data Collection and Sharing/Using the Data

Before any redesign is implemented, how the redesign will be assessed and how that data will be used is paramount to the effort. Without supporting data and a baseline to compare the redesign effort, the redesign effort can be significantly diminished.

Sufficient time must be given in advance of implementing the redesign to articulate what kind of data will need to be collected in order to make a sufficient analysis and subsequent decision about whether to continue, expand, or abandon the redesigned approach.

The following questions you might consider:

- a. What baseline year will you choose in order to look forward or backward to help answer questions about the results you observe?
- b. Who will be in a position to obtain the data from the institutional research department on your campus and who will also analyze the data, if someone other than the institutional researcher?
- c. What kind of data will be gathered that will be useful to determine if the redesign is effective or not?
- d. What is the plan for gathering preliminary pilot data and a timeline for full implementation after the pilot stage of the redesign is over?

To engage with the data, the institutional research department, or whoever will be analyzing the data, should share the data with stakeholders in a timely manner and in such a way as to match the types of conversations that different groups may have regarding what the data show. If possible, results of the first implementation prior to scale-up, should be shared so that modifications and/or adjustments in the redesigned course can be made to promote a redesign with the desired end result in mind.

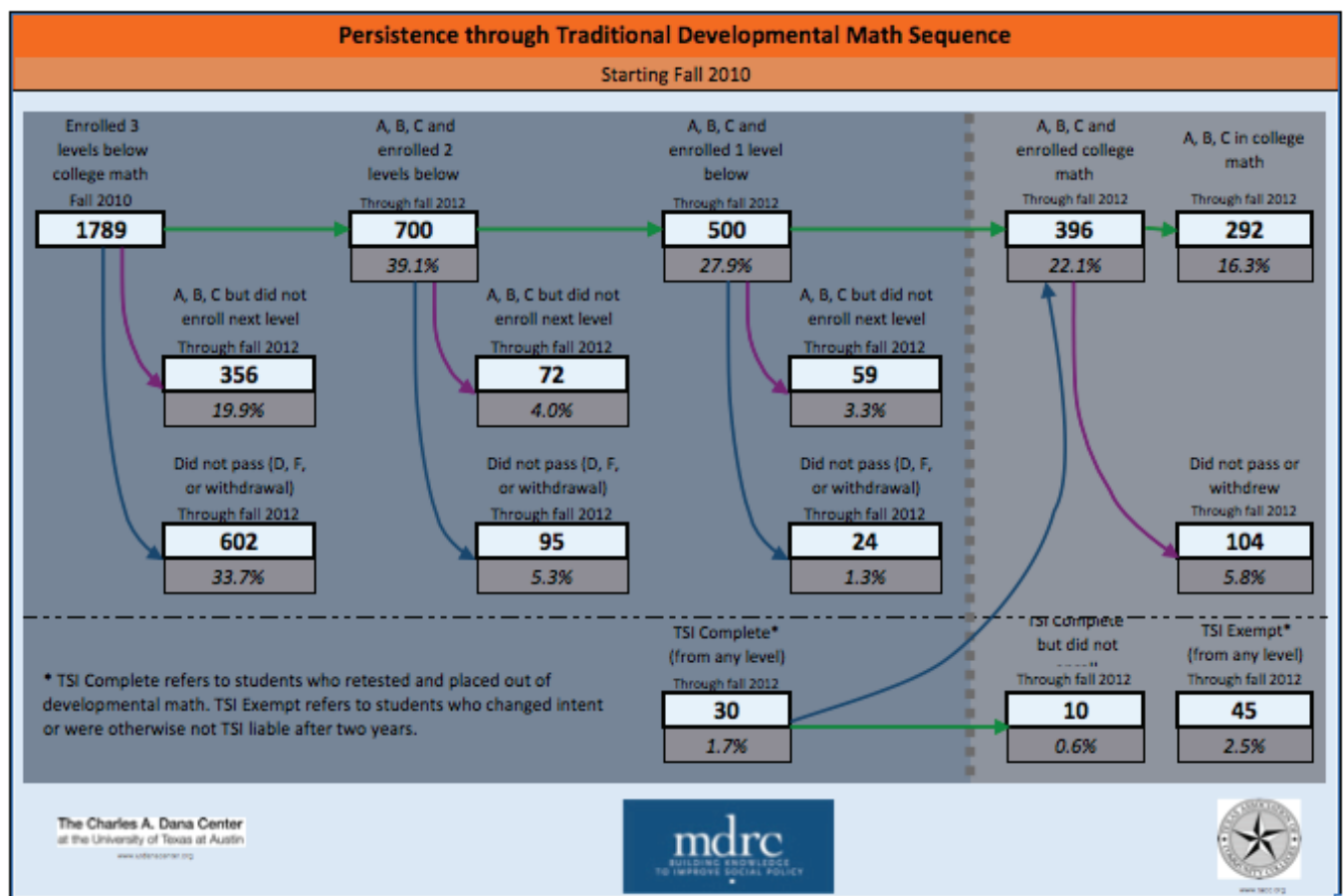
Appendix E: Persistence Tool

This tool tracks the flow of the entire population of students in developmental mathematics from semester to semester to see how many students continue through the sequence. This analysis should be repeated because it is like a barometer. It is important to see if the changes have an effect over time.

In addition to providing a historical look at progress through developmental math, this tool can be used to compare students who have taken New Mathways Project courses with similar students who enrolled in traditional developmental math courses.

Beginning in 2014, you should use the tool to compare data with one year of follow-up for the two groups (students who enroll in NMP sections and students who enroll in comparable-level standard sections) in the 2013–2014 academic year.

The complete template consists of several worksheets. The example shown below is one worksheet. The complete template is available on the implementation guide webpage: http://www.utdanacenter.org/nmp/implementation_guide.



Appendix F: An Overview of the NMP: Focus on Curricular Materials

The NMP Model

The NMP is a systemic approach to improving student success and completion through implementation of processes, strategies, and structures based on four fundamental principles:

1. Multiple pathways with relevant and challenging math content aligned to specific fields of study
2. Acceleration that allows students to complete a college-level math course more quickly than in the traditional developmental math sequence
3. Intentional use of strategies to help students develop skills as learners
4. Curriculum design and pedagogy based on proven practice

Through a joint enterprise with the Texas Association of Community Colleges, the Dana Center has received the support of all 50 community college districts in Texas to develop the NMP.

In addition to close collaboration with college administrators, faculty, and staff, we are working with state-level leaders to make recommendations for coherent policies and practices to support the principles of the NMP. These recommendations specifically address issues such as legislation, placement, articulation, and funding and includes outreach to four-year institutions in Texas. Our work will provide a model for similar initiatives in other states.

The NMP Tools and Services

Implementing sustainable change of this magnitude requires work across an entire system. The Dana Center is charged with developing tools and services to support colleges in this work. These technical assistance resources will utilize multiple delivery methods and will target key stakeholder groups including administration, institutional research, mathematics and student success faculty, and student support services. The tools and services fall into three broad categories:

- Institutional-Level Planning Tools
- Professional Learning Services and Materials
- Curricular Materials

The NMP resources will be available to colleges within and outside of Texas.

The NMP Curricular Materials

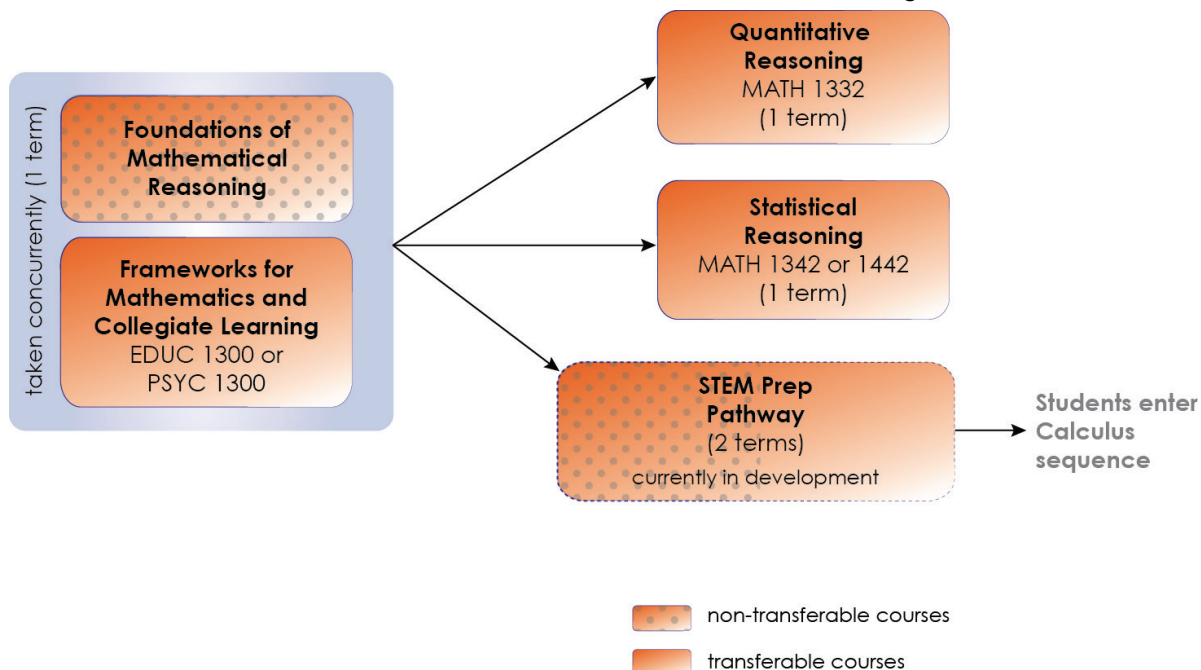
The NMP courses are designed to enable students placed into developmental mathematics to complete a credit-bearing, transferable mathematics course on an accelerated timeline, while building skills for long-term success in college and in life.

Figure 1 shows the structure of the NMP courses. Students who have completed Arithmetic or who are placed at Beginning Algebra level start in *Foundations of Mathematical Reasoning*. This developmental course will help students develop foundational skills and conceptual understanding in the context of college-level course material. These skills include numeracy,

proportional reasoning, algebraic reasoning, descriptive statistics, and basic probability and modeling.

Students in the *Foundations* course will also enroll in a co-requisite, college-level learning frameworks course, *Frameworks for Mathematics and Collegiate Learning*. This course teaches concepts from the learning sciences to help students acquire the strategies and tenacity necessary to succeed in mathematics, in other college coursework, and in their future careers. These concepts will be applied, practiced, and reinforced in the mathematics courses.

Figure 1: NMP Courses



As an outcome of the *Frameworks* course, students will learn about different careers, set academic goals, and create a completion plan, which will include selecting the correct mathematics pathway for their goals. Students will then register for the next course in the appropriate pathway.

The two non-STEM options are college-level courses: *Quantitative Reasoning* and *Statistical Reasoning*. In Texas, these courses are aligned to existing ones in the Academic Course Guide Manual (ACGM) as shown in Figure 1. STEM majors will take a two-course sequence of *Algebraic Reasoning I* and *II*. The ACGM designation for the *Algebraic Reasoning* sequence will be determined when early development begins. The NMP will also include a “bridge course” that allows students who start in the statistics or quantitative reasoning pathways to change to the STEM Prep pathway.

The NMP curricular materials are designed for a classroom-based delivery with online materials to facilitate classroom activities and out-of-class learning. Curricular materials will be rolled out over a period of several years with the first courses becoming available for use in Fall 2014. A free version of the *Frameworks* course is available on the Dana Center website. Learning

outcomes, course outlines, and sample lessons for the mathematics courses are also posted as they become available.

To learn more about the courses and our work in early college mathematics reform, and to receive updates on the NMP, visit <http://www.utdanacenter.org/higher-education> or contact us at mathways@austin.utexas.edu.

Appendix G:
Communication Plan Template

Purpose:

Communication Goals:

Communication Lead, responsible for ensuring information is disseminated to people and responses are collected as needed:

Communication Subcommittee Membership:

NMP Communication Plan

| Deliverable | Audience | Delivery Method & Frequency | Who's Responsible | Deadline | Status |
|--------------------|-----------------|--|--------------------------|-----------------|---------------|
| Goals: | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

An electronic version of this template is provided on the implementation guide webpage: http://www.utdanacenter.org/nmp/implementation_guide

Appendix H:
Sample Communication Plan (Temple College)

Purpose:

Communication Goals:

Communication Lead, responsible for ensuring information is disseminated to people and responses are collected as needed: *Ms. Paula Talley*

Communication Subcommittee Membership: *New Mathways Leadership Team*

NMP Communication Plan

| Deliverable | Audience | Delivery Method & Frequency | Who's Responsible | Deadline | Status |
|---|---|------------------------------|---------------------------------------|-----------------------------|------------------------------|
| Goals: | | | | | |
| Visit Developmental Math classes | DE Math Learners | Presentation—Once a semester | Student Success and Math Department | Spring 2014 and Summer 2014 | Already done for fall 2013 |
| Update NMP website with additional pathway—Quantway | Prospective DE Learners, TC employees, TC Board members | Online | Ms. Paula Talley and Ms. Alison Garza | March 2014 | Website currently up-to-date |
| Update NMP fliers and posters around campus | Prospective DE Learners and employees | Posters and Fliers | Ms. Paula Talley | March 2014 | |
| NMP Information Sessions | Prospective DE Learners and employees | Face-to-Face Presentations | Student Success Personnel | Spring/Summer 2014 | |

NMP Communication Plan

| Deliverable | Audience | Delivery Method & Frequency | Who's Responsible | Deadline | Status |
|--|--|-----------------------------|--|---------------------------|--------|
| Goals: | | | | | |
| Update NMP “video” with additional pathway—Quantway | Prospective DE Learners and employees | PowerPoint and YouTube | Ms. Paula Talley | March 2014 | |
| New Student Orientations | Prospective DE Learners | Face-to-Face Presentation | Student and Enrollment Service Personnel | January 2014, June 2014 | |
| Give an update on NMP at the All College Day Meeting | Temple College Employees and Board Members | Face-to-Face Presentation | Ms. Paula Talley | August 2014 | |
| Student Success Division Meetings | Student Success Faculty & Staff | Face-to-Face Presentation | Ms. Paula Talley | January 2014, August 2014 | |
| Advise Nursing Learners | Nursing Learners | Face-to-Face Presentation | Temple College Advising Team | Spring 2014 | |
| Advise Target Developmental Mathematics Learners | DE Math Learners | Face-to-Face Presentation | Temple College Advising Team | Spring 2014 | |

Appendix I: Resource Allocation: Memo to the Administrative Leadership

This memo is provided by Martha M. Ellis, Ph.D., former community college president and Associate Vice Chancellor of Community College Partnerships for the University of Texas System. The purpose of the memo is to help frame the discussion around the role of campus leadership in allocating resources to support faculty and staff in doing the work.

The NMP is a systemic approach to improving and accelerating student completion of courses and a college credential. The benefit to students, business and industry, and the community will be increased employability of a knowledgeable workforce and citizenry.

The benefit to the college will be increased retention and college credential completion.

To achieve these benefits, the college administration will provide leadership and support for faculty, advisors, institutional research, recruitment, tutors, and other support services.

Leadership Matters

Successful implementation of the NMP on your campus will be influenced by the leadership of the senior administrative team. Your actions, support, and encouragement matter. The campus Leadership Team can support a successful implementation by fostering a college culture of permission giving, risk taking, and tolerance for disequilibrium while instituting formal processes for NMP implementation.

The support provided by the administrative team will include a variety of resources invested in faculty, advisors, tutors, and other support staff during the two years of initial implementation. Release time, stipends, training time, and travel funding are items to consider.

For example, the director of advising will need a stipend or release time to develop a comprehensive advising plan, materials for advisors, training for formal and informal advisors, and an evaluation plan, as well as time to support the registrar and information technology staff with changes in the registration system. The director of advising may also need funds to travel to a meeting with other directors of advising to share lessons learned and advance the completion agenda of the NMP.

Acknowledging the limited budgets of community colleges, the suggested requirement of financial resources may seem unwarranted. However, the following factors will illustrate that this investment will have a positive yield to the finances of the college.

- The increased number of students succeeding in developmental mathematics, college-level mathematics, and completing a degree will increase the college's student success points, leading to increased state performance-based funding.
- The returns on investment of funds expended to implement a retention effort are easily examined. The Noel-Levitz Return on Investment Estimator is a helpful tool for estimating ROI.
https://www.noellevitz.com/documents/shared/student_retention/returnonInvestmentestimator.pdf
- The financial investment is short-term, while the return on investment is long-term.

Appendix J: Resource Allocation: Recommendations for Stipends and Work Release

Thanks to Rex Peebles, Ph.D. Vice President of Instruction at Midland College, for contributing these recommendations.

Faculty

Release time or a stipend for faculty for work on the New Mathways Project can easily be equated to semester credit hours. Faculty members have a clearly defined workload, expressed as a number of classes or semester credit hours, usually 5 classes or 15 hours each Fall and Spring semester. They have clearly defined duties—that is, teach classes.

For every hour a faculty member spends teaching classes, it is generally expected that two hours are spent in preparation, grading, talking with students, and so on. Thus, for every three hours per week of work associated with the New Mathways Project, release time of a semester credit hour can be granted.

Where such release time is not possible or not desired by the faculty member, a stipend can be paid. The extra work can then be equated to an overload at the rate of one semester credit for every three hours of work associated with the New Mathways Project.

Non-Faculty

Non-faculty generally have less clearly defined workloads and duties than do faculty. All job classifications, with the exception of classified/clerical staff, usually have “other duties as assigned” as the last item on the job description.

The temptation is great, therefore, to simply assign New Mathways Project work as a part of “other duties as assigned” and then expect it to get done along with the regularly assigned duties. Nonetheless, taking this route is neither fair to the institution nor to the NMP. Most importantly, it is not fair to the staff person.

Assuming that person already has a full-time job, one of three things will happen. One, the NMP will not receive the attention it needs because of the imperative to get regularly assigned duties accomplished. Two, regularly assigned duties will suffer in an effort to get NMP work completed. Three, both regularly assigned duties and NMP work are accomplished because the staff person spends a lot of extra time ensuring both jobs are done. The result is essentially uncompensated work. Granted, most non-faculty staff are exempt, but so are faculty members.

The institution should at least attempt to make the same accommodations for staff it makes for faculty. Staff work can be equated to hours worked and release time or stipends granted accordingly. If a staff member spends three hours a week on NMP work, they should either be released from other duties equal to the time or paid a stipend.

The stipend could be an hourly rate based on the employee’s hourly rate, essentially amounting to overtime. The stipend could also be paid at a rate proportional to the adjunct rate. In other words, determine the percentage of a full-time faculty member’s salary overload pay is. Then apply that percentage to the staff member’s hourly rate.

Appendix K: **Funnel Analysis Example** **for Students Potentially Eligible to Participate in the New Mathways Project**

Instructions for the funnel analysis are posted on the electronic version of this template, available at http://www.utdanacenter.org/nmp/implementation_guide. This populated example is provided as an illustration. Questions should be customized based on local requirements. Each descending level of the funnel draws from the students identified in the level above.

How many students have completed Arithmetic or placed at the level of Beginning Algebra?

4,000

How many students are in eligible majors?

2,500

How many students have not previously taken a learning frameworks course?

1,000

Appendix L: Foundations of Mathematical Reasoning Course Description

This is a quantitative literacy-based course designed to provide students with the skills and conceptual understanding to be successful in a college-level statistics or quantitative literacy course. It will also provide the foundation for students going into the NMP STEM Prep Algebraic Reasoning courses.

Prerequisite Skills and Placement

For the first implementation of *Foundations of Mathematical Reasoning* in Fall 2013, placement will be based on the college's requirements for enrollment in Beginning Algebra or the local equivalent. This allows for students who have previously failed Beginning Algebra, new students who place directly into the course, or students who have successfully completed a pre-requisite to Beginning Algebra. [Note: The State Implementation Team will discuss whether any other common placement standards should be set.]

The curricular materials are designed based on the assumption that students will be able to

- Demonstrate procedural fluency with real-number arithmetic operations (e.g., basic operations, comparing, contrasting), use arithmetic operations to represent real-world scenarios, and use those operations to solve problems.
- Use graphical representations on a real number line to demonstrate fluency when ordering numbers, representing operations (e.g., addition, subtraction, doubling, halving), and representing fractions and decimals.
- Demonstrate a basic understanding and familiarity with fractions, decimals, and percentages. Procedural competency for representing each number form and moving from one to the other is desired upon enrollment in this course, but out-of-class materials may be needed to review basic concepts and build basic skills.

Course Structure and Contact Hours

The course is designed for 4 contact hours, i.e., 4 contact hours per week in a semester system or an equivalent number of contact hours in a quarter system. Colleges may choose to offer this as a 4-credit course or as a combination of course credits and lab credits. In the latter case, it is important to note that the curriculum is not designed for a separate “lab time” from an instructional point of view. For example, if the course is scheduled as a 3-credit course with a 1-hour lab, the instructor will use all 4 contact hours for classroom instruction and activities.

Since this course is a developmental math course, colleges may choose how to number it. With the exception of Intermediate Algebra, developmental math courses do not currently have standard outcomes and course numbers in the Academic Course Guide Manual that colleges must use.

Each lesson in the course will be designed to implement the design principles of active learning as described in the NMP Curriculum Design Standards. All lessons will expect students to “do” mathematics and statistics such as analyze data, construct hypotheses, solve problems, reflect on their work, and make connections among and between mathematical concepts.

Foundations of Mathematical Reasoning is organized around big mathematical and statistical ideas and concepts. A primary goal of the curriculum is the development of conceptual understanding and building multiple strategies for solving problems (see the NMP Curriculum Design Standards) supporting students to make connections between concepts and apply previously learned material to new contexts. The course will prepare students for success in future courses and help them develop skills for the workplace and as productive citizens.

The curricular materials are offered through an online platform supported by McGraw-Hill. There is a student fee for the materials. There is no need for an additional text or materials. Contact the Dana Center for information on how to get access to the materials.

Course Description

This course surveys a variety of mathematical topics needed to prepare students for college level statistics or quantitative reasoning or for algebra-based courses. Topics include: numeracy with an emphasis on estimation and fluency with large numbers; evaluating expressions and formulas; rates, ratios, and proportions; percentages; solving equations; linear models; data interpretations including graphs and tables; verbal, algebraic and graphical representations of functions; exponential models. This course is not for college-level credit. Students in this course are required to take a co-requisite student success course.

Appendix M: Frameworks for Mathematics and Collegiate Learning Course Description

Frameworks for Mathematics and Collegiate Learning is a semester-long course that teaches concepts from the learning sciences to help developmental math students acquire the strategies and tenacity necessary to succeed in mathematics, in other college coursework, and in their future careers. Course instruction focuses on four main content strands:

Developing and maintaining motivation for college success: Students will identify their values, beliefs, and attitudes about themselves as individuals and as students and how those values, beliefs, and attitudes to influence their performance in college. Students will develop a system to monitor and manage their attitudes, emotions, and thoughts when faced with academic challenges. They will work to curtail self-defeating habits such as attributing failure to uncontrollable factors and to create a productive mindset by focusing on controllable behaviors.

Developing and using study strategies and skills: Students will demonstrate critical thinking skills and work to enhance their self-regulatory thoughts and behaviors. Some classroom activities will focus on how the brain works, including memory and brain plasticity. Students will also identify, select, and implement appropriate time management, procrastination elimination, note taking, test taking, reading, and oral and written communication strategies.

Building community and connecting to campus resources: Classroom activities will help foster a sense of belonging in the classroom so as to build trust among peers and with the instructor. Exploration of campus resources, including face-to-face meetings with academic advisors and financial aid representatives and visiting learning centers and libraries, will take place in-class and through out-of-class activities.

Finding your direction in college: Students will set and work toward academic, personal, and occupational goals. They will work with their instructor and their academic advisor to select math coursework for future semesters and will complete a semester-long career project that will help them identify skills and competencies they should build while in college.

This student success course is intended as a 3-credit-hour, college-level course. This lets students start accumulating college credit in their first semester. Students will complete numerous written assignments (in the form of journal entries and formal reports) as well as deliver oral presentations individually and within groups. Students will complete initial prescriptive assessments as well as assessments at the end of the course to measure changes in their use of study strategies and in their values, beliefs, and attitudes. Institutions have the discretion to list the course under either the Psychology (PSYC 1300) or Education (EDUC 1300) or to cross-list the course under both headings.

Course Description

This course is meant to be taken concurrently with *Foundations of Mathematical Reasoning*. It teaches concepts from the learning sciences to help developmental math students acquire the strategies and the tenacity necessary to succeed in mathematics, in other college coursework, and within their future careers. Course instruction focuses on four main content strands: developing and maintaining motivation for college success, developing and using study strategies and skills, building community and connecting to campus resources, and developing a college completion plan.

Appendix N: Statistical Reasoning Course Description

Statistical Reasoning is designed for a 4-credit course with the option of cutting topics for a 3-credit course. The curricular materials are offered through an online platform supported by McGraw-Hill. There is a student fee for the materials. There is no need for an additional text or materials. Contact the Dana Center for information on how to get access to the materials.

Course Description

Statistical Reasoning is for students in business, nursing, allied health, and the social and behavioral sciences, or for any student whose college and career paths require knowledge of the fundamentals of the collection, analysis, and interpretation of data. Topics include the presentation and interpretation of univariate data via the use of graphical methods, measures of central tendency and dispersion, sampling methods, fundamentals of probability and combinatorics, discrete and continuous probability distributions, linear regression, statistical inference, confidence intervals, and hypothesis testing. Emphasis is placed on the development of statistical thinking, simulation, and the use of statistical software.

Appendix O: Recruitment Plan Template

An electronic version of this template is provided at
http://www.utdanacenter.org/nmp/implementation_guide

New Mathways Project Student Recruitment Plan

Recruiting goals and outcomes:

Recruiting lead and subcommittee:

Training for advisors:

| Activities | Who's Responsible | Resources Needed | Timing | Status |
|------------|-------------------|------------------|--------|--------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Identifying and recruiting potential students:

| Activities | Who's Responsible | Resources Needed | Timing | Status |
|------------|-------------------|------------------|--------|--------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Appendix P:
Evaluation Plan Template

An electronic version of this template is provided at http://www.utdanacenter.org/nmp/implementation_guide

Title of the strategy / program / project:

Team lead and members:

| Evaluation Questions | Assessment Method | Tasks | Data Sources | Timing | Who's Responsible | Audiences | Reporting |
|----------------------|-------------------|-------|--------------|--------|-------------------|-----------|-----------|
| | | | | | | | |
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As always, we welcome your comments and suggestions for improvements. Please contact us at mathways@austin.utexas.edu or at the mailing address above.

About the Dana Center

The Dana Center works at scale with our nation's education systems to ensure that every student leaves school prepared for success in postsecondary education and the contemporary workplace—and for active participation in our modern democracy. We are committed to ensuring that the accident of where a student attends school does not limit the academic opportunities he or she can pursue. Thus, we advocate for high academic standards, and we collaborate with local partners to build the capacity of education systems to ensure that all students can master the content described in these standards.

Our portfolio of initiatives, grounded in research and two decades of experience, centers on mathematics and science education from prekindergarten through the early years of college. We focus in particular on strategies for improving student engagement, motivation, persistence, and achievement. We help our partners adapt promising research to meet their local needs and develop innovative resources and systems that we implement through multiple channels, from the highly local and personal to the regional and national. We provide long-term technical assistance, collaborate with partners at all levels of the education system, and advise community colleges and states.

The Center was founded in 1991 at The University of Texas at Austin. Our staff members have expertise in leadership, literacy, research, program evaluation, mathematics and science education, policy and systemic reform, and services to high-need populations. We have worked with states and education systems throughout Texas and across the country. For more information about our programs and resources, see our homepage at www.utdanacenter.org.

About the New Mathways Project

The NMP is a systemic approach to improving student success and completion through implementation of processes, strategies, and structures based on four fundamental principles:

1. Multiple pathways with relevant and challenging mathematics content aligned to specific fields of study
2. Acceleration that allows students to complete a college-level math course more quickly than in the traditional developmental math sequence
3. Intentional use of strategies to help students develop skills as learners
4. Curriculum design and pedagogy based on proven practice

In Texas, the NMP is being developed as a statewide reform effort through a unique enterprise between the Charles A. Dana Center at The University of Texas at Austin and the Texas Association of Community Colleges. The presidents and chancellors of all 50 Texas community college systems agreed to support this joint enterprise.

For more information about the New Mathways Project, see <http://www.utdanacenter.org/higher-education/new-mathways-project>

For more information about the Texas Association of Community Colleges, see www.tacc.org.

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