EXECUTIVE BOARD MINUTES

SCC 2023 Minutes

June 22, 2023 Minutes

July 27, 2023 Minutes

AMATYC 2023 Monthly Executive Board Meeting

Thursday, June 22, 2023
Virtual (via Zoom)

Thursday, June 22, 2023

Note: All times are EST

The meeting was called to order at 4:03 pm by President Laura Watkins. The following members of the Executive Board were present:

Laura Watkins	President	Alvina Atkinson	Southeast Vice President
George Hurlburt	President-Elect	Brandon Bartley	Midwest Vice President
Kathryn Kozak	Past President	Dale Johanson	Central Vice President
Nancy Rivers	Secretary	Shannon Ruth	Southwest Vice President
Barbra Steinhurst	Treasurer	Sarah Pauley	Northwest Vice President
AJ Stachelek	Northeast Vice President	Eddie Tchertchian	West Vice President

Also present were: Anne Dudley, Executive Director

President Watkins reviewed the Order of Business – Meeting Agenda. (Attachment A)

Motion: That the AMATYC Executive Board approve the Agenda provided on the previous pages.

Made by Steinhurst and seconded by Bartley.

Motion Approved

Executive Session

The Executive Board entered Executive Session at 4:05 pm. Anne Dudley, Executive Director was asked to remain for the Executive Session.

The Executive Board exited Executive Session at 4:07 pm. Secretary Rivers reported that the following appointments were made, pending membership verification:

- Robert Cappetta, (Florida Southwestern State College, Robert.cappetta@fsw.edu),Mathematics Intensive Mathematics Anet Chair. Effective 01/01/24 through 12/31/25.
- Christine Mirbaha, (CC of Baltimore County – Dundalk, CMirbaha@ccbcmd.edu), Placement and Assessment ANet Chair. Effective 01/01/24 through 12/31/25.
- Mark A. Earley, (Columbus State Community College, mearley3@cscc.edu), AMATYC Standards Team Chair. Effective 01/01/24 through 12/31/25.
- Barbara Leitherer, (CC of Baltimore County, BLeitherer@ccbcmd.edu), International Mathematics Anet Chair. Effective 01/01/24 through 12/31/25.
- Kimberlyann (Kim) Granger, (St. Louis Community College at Wildwood, kgranger@stlcc.edu), Developmental Mathematics ANet Chair. Effective 01/01/24 through 12/31/25.

New Business:

Motion: That the AMATYC Executive Board approve the attached changes to PPM 10.1.5, Student Mathematics League Test Development Team, effective immediately. (Attachment B)

Made by Tchertchian and seconded by Johanson.

Motion Approved

Motion: That the AMATYC Executive Board approve the attached changes to PPM 2.5.6, The Margie Hobbs Award, effective immediately. (Attachment C)

Made by Kozak and seconded by Pauley.

Motion Approved

Motion: That the AMATYC Executive Board approve the attached changes to the PPM, Sections 5.2 (President: Conference Duties part 7), 5.6 (Treasurer: Financial Duties part 7), 8.1.1 (Selection Process part 4), 8.1.2 (Contract Requirements part 10), and 8.2 (Conference Timetable part 12), effective immediately. (Attachment D)

Made by Tchertchian and seconded by Rivers.

> **Motion to Amend:** That the AMATYC Executive Board approve the attached changes to the PPM, Sections 5.2 (President: Conference Duties part 7), 5.6 (Treasurer: Financial Duties part 7), effective immediately. (Attachment D)
>
> Made by Steinhurst and seconded by Bartley.

Motion to Amend Approved

Amended Motion Defeated

Motion: That the AMATYC Executive Board approve the attached proposal to hold a Teaching for PROWESS Summer Institute at Clackamas CC near Portland, Oregon in June 2024. (Attachment E)

Made by Pauley and seconded by Kozak.

Motion Approved

Parking Lot

Discussion: Social Offset/Advocacy Taskforce

The Advocacy Task Force will investigate what AMATYC could do, referring to a letter sent out by the MAA and consulting AMATYC's Legal Advisor. Laura Watkins will provide direction to Dennis Ebersole, task force chair.

Discussion: Renew Higher Logic Thrive Community Service

Motion: That the AMATYC Executive Board approve a two-year renewal of our current Higher Logic Thrive Community service beginning August 29, 2023.

Made by Johanson and seconded by Tchertchian.

Motion Approved

Discussion: Delegate Assembly move to Virtual (Bylaws)

The Executive Board discussed if a bylaws amendment is needed with regards to holding the Delegate Assembly virtually. The task force led by Alvina Atkinson will await information from the President, Past President, and President-Elect after they consult the Parliamentarian.

Discussion: Minutes Approval

Motion: That the AMATYC Executive Board approve the minutes for the January Monthly Meeting, February Monthly Meeting, Spring Board Meeting, and the May Monthly Meeting as submitted.

Made by Rivers and seconded by Bartley.

Motion Approved

Discussion: Use of Electronic Signatures

Motion: That the AMATYC Executive Board explicitly authorize use of electronic signatures for withdrawals from AMATYC Investment Accounts.

Made by Steinhurst and seconded by Rivers.

Motion Approved

Motion: To suspend the 2023 AMATYC Summer Conference Call.

Made by Atkinson and seconded by Tchertchian.

Motion Approved

The June 22, 2023 Monthly Executive Board Meeting was adjourned and the Summer Conference Call suspended at 5:20 pm.

Nancy Rivers, Secretary 2022 – 2023
June 22, 2023

Laura Watkins, President 2022 – 2023
June 22, 2023

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E	TfP Summer Institute 2024 Board Proposal (@ Clackamas CC, near Portland, OR)	11

Attachment A: Agenda

Order of Business – Meeting Agenda
AMATYC Executive Board
June 2023 Meeting

Page	Agenda Item	Who?
	Call to Order	Watkins
Section A: Meeting Agenda		
A1	Order of Business	Watkins
A2	**(M) Adopt Order of Business**	Watkins
Section L: Executive Session		
L1 – L2	**(M) Appointments**	Watkins
Section M: New Business		
M1 – M3	**(M) Update of terms for SML Test Development Team (PPM 10.1.5)**	Hurlburt
M4 – M6	**(M) Update Margie Hobbs Award (PPM 2.5.6)**	Hurlburt
M7-M10	**(M) Update PPM Language about signing documents**	Hurlburt
M11 – M19	**(M) Summer Institute 2024 at Clackamas CC**	Ebersole
M20-M124	**(M) Minutes Approval**	Rivers
M125-M126	**(M) Renew Higher Logic Thrive Community Service**	Johanson
Section O: Parking Lot / Motion to Adjourn		
O1	Parking Lot Discussion Items	All
O2	**(M) Motion to Adjourn**	Watkins

Attachment B: PPM 10.1.5, Student Mathematics League Test Development Team

10.1.5 Student Mathematics League Test Development Team <FBM 2015>

Members of the Student Mathematics League Test Development Team assist the Test Developer in the development of the questions, answers, and solutions for the Student Mathematics League examinations.

Appointment Process

The Student Mathematics League Test Development Team shall consist of eight members, one from each of the eight regions of AMATYC. Members are recommended by the Student Mathematics League Coordinator and appointed by the AMATYC Executive Board.

Any members of the Test Development Team who are also Student Mathematics League Test Moderators will submit to the AMATYC Student Mathematics League Coordinator a completed AMATYC Student Mathematics League Coordinator Test Development Team Conflict of Interest Form each year. <FBM 2008>

Term of Office <SCC 2023>

The term length is three years on the following rotation schedule. The starting date of each term is April 1 and the ending date is March 31.

Regions 1, 2, 3	beginning 2024, 2027
Regions 4, 5, 6	beginning 2025, 2028
Regions 7, 8	beginning 2026, 2029

The term limit is three consecutive terms; exceptions may be granted by the board to waive the term limit for extenuating circumstances by a 2/3 vote of the entire board, or 9 votes.
<FBM 2007>

Attachment C: PPM 2.5.6, The Margie Hobbs Award

2.5.6 The Margie Hobbs Award <FBM 2016> <SCC 2017> <SBM 2019> <SCC 2023>

The Margie Hobbs Award, made possible through contributions to the AMATYC Foundation, is given annually to an AMATYC member who has been selected for the first time to present a reviewed session or workshop.

The Award

The amount of the award will be established by the Foundation Board during the budgeting process.

Selection Criteria

The Margie Hobbs Award is given to an individual who meets the following criteria:

- Is a member of AMATYC.
- Has submitted and been accepted to speak for the first time at the annual conference (either reviewed session or workshop).
- Is the sole presenter at the accepted session.
- Has completed a nomination packet.

Additional consideration will be given to individuals who can:

- Show evidence of engagement in professional development at college, state, and/or national levels.
- Show evidence of developing as a speaker.

Nomination and Award Dates

Nominations for the award are due by June 15 to the AMATYC Foundation. The award will be presented at a general session of the AMATYC annual conference.

How to Submit a Nomination

Nominations should be submitted through the form on the AMATYC website as a single pdf file that contains the following:

- A letter from the nominee addressing why the individual deserves the award.
- A copy of the speaker's acceptance letter.
- The nominee’s curriculum vitae.
- A support letter from their supervisor.

Attachment D: PPM 5.2, President: Conference Duties part 7, PPM 5.6, Treasurer: Financial Duties part 7, PPM 8.1.1 Selection Process part 4, PPM 8.1.2, Contract Requirements part 10, PPM 8.2, Conference Timetable part 12

NOTE: MOTION WAS DEFEATED

5.2 President <FBM 2019>

Conference Duties

7. President or Executive Director sign all conference contracts after any necessary approvals are obtained. The signed contract shall be filed with the office. <SCC 2023>

5.6 Treasurer <FBM 2018>

Financial Duties

7. Maintain AMATYC Investments in accordance with AMATYC investment policy. The AMATYC Treasurer, with direction from the AMATYC Investments Board, may reallocate AMATYC funds according to the guidelines stated in AMATYC investment policy. However, in order to withdraw funds from any of the AMATYC investment accounts, a written request signed (electronic signature or email stating approval) by any two of the following officers is required: President, President-Elect, Treasurer, and Past President. <SCC 2023>

8.1.1 Selection Process

4. The hotel contract should be completed at least four (preferably five) years prior to the conference. The final proposed contract should be sent to all Board members, Executive Director and AMATYC's legal advisor before signing. An AMATYC Executive Board member or the legal advisor with questions or reservations, should contact the President. When all is in order, the President or Executive Director will sign the contract on behalf of AMATYC and the signed contract filed with the office. <SBM 2007> <SCC 2023>

8.1.2 Contract Requirements

10.
    - AMATYC has retained the services of a professional conference planning company. That company is currently Experient.
    - The primary responsibility for hotel and convention center contract negotiations lies with AMATYC's professional conference planning company (PCPC) representative, AMATYC's Conference Coordinator and AMATYC's legal advisor. The Conference Coordinator oversees and facilitates the negotiation process in collaboration with AMATYC legal advisor. Persons holding the positions of Conference Coordinator, AMATYC legal advisor, President, President-Elect, Past President, Treasurer, and Executive Director shall review these contracts and submit concerns to the Conference Coordinator by a reasonable date. Failure to reply shall not delay the negotiation process. The President or Executive Director shall sign all contracts on behalf of AMATYC and file them with the office. All signatures should be prefaced with "On Behalf of AMATYC." <SCC 2023>

8.2 Conference Timetable <SCC 2023>

12. Sign the hotel contract and file it with the office.		Spring, C-5	President or Executive Director

Attachment E: TfP Summer Institute 2024 Board Proposal, Clackamas CC

TfP Summer Institute 2024 Board Proposal

Title:*Activating Active Learning and Transforming a Mathematics Department (Note: title may change to reflect a theme of ‘bridging’)*

Director: Karen Gaines

Planning Team: Dennis Ebersole, Scot Pruyn, Ann Sitomer, Anne Dudley

Host: Clackamas Community College (Harmony Campus in Milwaukie, OR)

Goal: Support 2YC mathematics departments’ work towards instructional and department-level change through actively engaging students in authentic mathematical activity and faculty members’ and college support for this work.

Room and Board: Hotels near College with breakfast (Th-S) provided, Lunch at Institute (T-Sa), Dinner on their own (group outing optional).

Insurance: documents are in planning folder

Title and Description of Courses:

Dates in person: June 20-22, 2024. Travel Days 19th and 23rd.

Virtual sessions: Follow up PD sessions on Zoom in fall 2024 and winter/spring 2025.

This course will be structured as interactive sessions that provide information and experience with topics such as: Active Learning, Building Thinking Classrooms, Building DEI Classrooms,

Using OPAL to Evaluate Active Classrooms, Using the Vision and Transformation Catalyst Tool (VTCT) to support department work, and research in the community college setting.

The sessions and facilitators will be determined by an application process open to the TfP project and others invited.

Sample Schedule:

Wednesday,June 19 - Travel day; excursion to the Columbia Gorge (for early arrivals); evening gathering event

Thursday, June 20 - sessions from 9:00 am - 5 pm (including an excursion for one of the sessions), dinner on their own

Friday, June 21 - sessions from 9:00 am - 5 pm, dinner on their own

Saturday, June 22 - sessions from 9:00 am - 5 pm, dinner on their own

Sunday, June 23 , Travel day; Tour of Portland Gardens for those with late flights or traveling on Monday

Need: After presentations at multiple conferences (including AMATYC, affiliate conferences, JMM, etc.) it is apparent that people are aware of active learning but do not know how to get started and how to get their department engaged. This SI will demonstrate

Instructors: TfP leadership, Phase 1 College Teams members, Phase 2 College Teams members, invited facilitators.

Financial Support: This will be fully funded by the TfP project. Due to travel issues during COVID, budget is available to be reallocated to this effort.

Number of Participants: 30-50 (consisting of groups of 3-5 from a department)

Length: 3 days

PR Plans and Membership notification: Flyer distributed at the Omaha conference; Email blasts; announcements on myAMATYC,amatyc.org, social media, reciprocal organizations.

Budget

The following format should be used in preparing the budget for proposed and annual institutes. This format should also be used in reports of Summer Institutes.

1. Income - TfP Grant will fund all SI activities

    1. Fees- $800 per college
       ~15 colleges at $800 is $12,000. Colleges will also need to ensure that their participating faculty are members of AMATYC.

        - Support for fall/spring followup workshops
        - Support for community on myAMATYC

    2. AMATYC contribution (first year institute only) - N/A

3. Others

2. Total Expenses based on 50 participants and 10 presenters

    1. Meals - $13,200
        - Wednesday evening reception (60 x $100 = $6000),
        - Thursday, Friday, Saturday Lunches (3 x 60 x $30 = $5400),
        - Snacks (water, soda, break food) (3 x 60 x $10 = $1800)
        - Breakfasts - as part of hotel stay
        - Dinner - on their own
        - 1 dinner together - 60 x $100 = $6000 (possible)
    2. Rooms - $60,000
        - 60 participants x 4 nights x $ $250/night = $60,000
        - Share rooms?
        - 2 rooms per college?
    3. Publicity - $1000
        - Social media, email, 1 printed flyer for packet
        - $600 + copying charges
    4. Activities
    5. Shuttle bus? Admission?
    6. Shuttle for hotel?
    7. Supplies ($13,000)
        - T-Shirts $3000
        - Swag $5000
        - Books $5000
    8. Honoraria ($10,000)
        - 10 facilitators x $1000 each = $10,000
    9. Travel Allowance for Instructors and Participants ($42,000)
        - 60 participants x $700 = $42,000
        - $600 for flight, up to $100 for airport transportation, parking, etc.
    10. Miscellaneous – Ann is looking at possible CEU credits from OSU’s college of education

Total Balance $139,200

AMATYC 2023 Monthly Executive Board Meeting

Thursday, July 27, 2023
Virtual (via Zoom)

Thursday, July 27, 2023

Note: All times are EST

The meeting was called to order at 4:07 pm by President-Elect George Hurlburt. The following members of the Executive Board were present:

George Hurlburt	President-Elect	Brandon Bartley	Midwest Vice President
Kathryn Kozak	Past President	Dale Johanson	Central Vice President
Nancy Rivers	Secretary	Shannon Ruth	Southwest Vice President
Barbra Steinhurst	Treasurer	Eddie Tchertchian	West Vice President
AJ Stachelek	Northeast Vice President		
Dennis Ebersole	Mid-Atlantic Vice President		

Also present was: Anne Dudley, Executive Director

President-Elect Hurlburt reviewed the Order of Business – Meeting Agenda. (Attachment A)

Motion: That the AMATYC Executive Board approve the Agenda provided on the previous pages.

Made by Kozak and seconded by Ebersole.

Motion Approved

New Business:

Motion: That the AMATYC Executive Board approve the attached changes to the PPM, Sections 5.2 (President: Conference Duties part 7), 5.6 (Treasurer: Financial Duties part 7), 8.1.1 (Selection Process part 4), 8.1.2 (Contract Requirements part 10), and 8.2 (Conference Timetable part 12), effective immediately. (Attachment B)

Made by Hurlburt and seconded by Rivers.

Motion Approved

Motion: That the AMATYC Executive Board approve the attached changes to PPM 12.3, *MathAMATYC Educator,* effective immediately. (Attachment C)

Made by Kozak and seconded by Ebersole.

Motion Approved

Motion: That the AMATYC Executive Board endorse the book “Antiracist Mathematics Education: Stories of Acknowledgment, Action, and Accountability”, effective immediately, with the following statement:

> The American Mathematical Association of Two-Year Colleges (AMATYC) wholeheartedly endorses the Book “Antiracist Mathematics Education: Stories of Acknowledgment, Action, and Accountability”. The personal stories, backed by research, emphasize the ongoing problem of racial inequality within educational systems in the United States. AMATYC is dedicated to the philosophy of equality of opportunity and treatment for all students, matching the priorities of this groundbreaking book.

Made by Hurlburt and seconded by Johanson.

> **Motion:** To postpone this until our next meeting.
>
> Made by Tchertchian and seconded by Johanson.

Motion Approved

Motion Postponed

Motion: That the AMATYC Executive Board approve the spirit of the changes made to Beyond Crossroads Chapter 6, pages 37-50. (Attachment D)

Made by Hurlburt and seconded by Ebersole.

Motion Defeated

Parking Lot

Discussion: Changing Times of Fall Meetings

> The times of the Aug. 24, Sep. 21, and Oct. 19 monthly Executive Board Meetings was discussed. It was decided that this will be discussed at the next Three President’s Meeting at which a method of polling all Executive Board members will be determined.

Discussion: Committee for Position Statement Editor Position

> A search committee to fill the Position Statement Editor Position (formerly the Editing Director) when Vicky Mayfield’s term expires was formed. The committee will be Nancy Rivers, chair, Kate Kozak, George Hurlburt, and Brandon Bartley.

Discussion: Rewriting Endorsement Statement for TODOS Book

> Eddie Tchertchian, chair, and Dennis Ebersole will work on rewriting an endorsement statement for the book “Antiracist Mathematics Education: Stories of Acknowledgment, Action, and

Accountability". Executive Board members not present at this meeting will be given the opportunity to join this effort. The approval of the statement will be considered at the next Executive Board meeting.

Following the adjournment of this monthly meeting, the Membership Committee met.

Motion: To suspend the 2023 AMATYC Summer Conference Call.

Made by Stachelek and seconded by Bartley.

Motion Approved

The July 27, 2023 Monthly Executive Board Meeting was adjourned and the Summer Conference Call suspended at 4:59 pm.

Nancy Rivers, Secretary 2022 – 2023
July 27, 2023

George Hurlburt, President-Elect 2022 – 2023
July 27, 2023

ATTACHMENTS

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Attachment A: Agenda

Order of Business – Meeting Agenda
AMATYC Executive Board
July 2023 Meeting

Page	**Agenda Item**	**Who?**
	Call to Order	Watkins
Section A: Meeting Agenda		
A1	Order of Business	Watkins
A2	**(M) Adopt Order of Business**	Watkins
Section M: New Business		
M1 – M4	**(M) Update PPM Language about signing documents**	Hurlburt
M5 – M17	**(M) Update *MathAMATYC Educator* PPM Language**	Kozak
M35	**(M) Possible Endorsement of TODOS Book**	Hurlburt
M18-M34	**(M) Beyond Crossroads Chapter 6 Revisions**	Hurlburt
Section O: Parking Lot / Motion to Adjourn		
O1	Parking Lot Discussion Items	All
O2	**(M) Motion to Adjourn**	Watkins

Attachment B: PPM 5.2, President: Conference Duties part 7, PPM 5.6, Treasurer: Financial Duties part 7, PPM 8.1.1 Selection Process part 4, PPM 8.1.2, Contract Requirements part 10, PPM 8.2, Conference Timetable part 12

5.2 President <FBM 2019>

Conference Duties

8. President or Executive Director sign all conference contracts after any necessary approvals are obtained. The signed contract shall be filed with the office. <SCC 2023>

5.6 Treasurer <FBM 2018>

Financial Duties

8. Maintain AMATYC Investments in accordance with AMATYC investment policy. The AMATYC Treasurer, with direction from the AMATYC Investments Board, may reallocate AMATYC funds according to the guidelines stated in AMATYC investment policy. However, in order to withdraw funds from any of the AMATYC investment accounts, a written request signed (electronic signature or email stating approval) by any two of the following officers is required: President, President-Elect, Treasurer, and Past President. <SCC 2023>

8.1.1 Selection Process

5. The hotel contract should be completed at least four (preferably five) years prior to the conference. The Conference Coordinator oversees and facilitates the negotiation process in collaboration with AMATYC Legal Advisor. Persons holding the positions of Conference Coordinator, AMATYC Legal Advisor, President, President-Elect, Past President, and Executive Director shall review these contracts and submit concerns to the Conference Coordinator by a reasonable date. Failure to reply shall not delay the negotiation process. When all is in order, the President or Executive Director will sign the contract on behalf of AMATYC and the contract will be filed with the office. <SBM 2007> <SCC 2023>

8.1.2 Contract Requirements

11.
    - AMATYC has retained the services of a professional conference planning company.

- The primary responsibility for hotel and convention center contract negotiations lies with AMATYC's professional conference planning company (PCPC) representative, AMATYC’s Conference Coordinator and AMATYC's legal advisor. The Conference Coordinator oversees and facilitates the negotiation process in collaboration with AMATYC legal advisor. Persons holding the positions of Conference Coordinator, AMATYC legal advisor, President, President-Elect, Past President, and Executive Director shall review these contracts and submit concerns to the Conference Coordinator by a reasonable date. Failure to reply shall not delay the negotiation process. The President or Executive Director shall sign all contracts on behalf of AMATYC and file the contracts with the office. <SCC 2023>

8.2 Conference Timetable <SCC 2023>

12. Sign the hotel contract and file it with the office.		Spring, C-5	President or Executive Director

Attachment C: PPM 12.3 *MathAMATYC Educator*

12.3 ***MathAMATYC Educator*** <SCC 2023>

The *AMATYC Review* has been retired. <SBM 2008>

The content of *MathAMATYC Educator (MAE)* will focus primarily on educational articles, in particular those that would be useful to two-year college faculty. <SBM 2008>

12.3.1 *MathAMATYC Educator* Publication Policies <SBM 2009>

12.3.2 Journal Editor

12.3.3 Journal Production Manager

12.3.4 Journal Editorial Panelists

12.3.5 Publication Guidelines for *MathAMATYC Educator*

12.3.6 Journal Review Editor

12.3.1 *MathAMATYC Educator* Publication Policies

<SBM 2009>The *MathAMATYC Educator* (the Journal) shall be published three times a year. The mailing dates shall be on or about January 20, May 20, and September 20.

Content

1. The *MathAMATYC Educator* will focus primarily on educational articles, in particular those that would be useful to two-year college faculty, as well as regular features. The regular features could include a problem section, a media section, technology review section, short teaching articles or lesson plans that offer immediate application for the reader, Editor's Comments, Letters to the Editor, and organization announcements. A themed issue should be considered every two to three years. The content of each issue shall be determined by the Editor.

2. Organizational announcements may include:

   • all issues – upcoming conference information, information on the on-line store, membership information

   • Winter issue – upcoming Summer Institute information, traveling workshop information

• Spring issue – Student Mathematics League information, call for nominations for Teaching Excellence Award (even numbered years) and the Mathematics Excellence Award (odd numbered years)

• Fall issue – Call for Presenters for following year's conference, AMATYC Foundation information, call for nominations for Teaching Excellence Award (even numbered years) and the Mathematics Excellence Award (odd numbered years)

3. The manuscript submission policy shall be printed on the official journal page of the Journal. Manuscripts shall be submitted to the Review Editor. The most current edition of the Publication Manual of the American Psychological Association shall be used for the style format.

Production

1. Each issue will contain between 56 and 72 pages. Printing processes require a multiple of 4 pages, with a preference for a multiple of 8 pages. This page count is a "cover to cover" count and includes all pages from the front cover to the back cover. The size of each issue is determined by budget constraints. The number of pages of advertising should not exceed 20% of the number of pages in each issue.

2. The *MathAMATYC Educator* will be magazine style – approximately 8-1/4 inches by 10-3/4 inches with glossy paper and a four-color cover and with color throughout.

3. The Editor forwards articles in editable electronic format to the Production Manager.

4. The Production Manager cleans up the raw copy for uniformity (indents, spacing, punctuation, etc.) and may make other minor edits as recommended by the Journal Editors. Equations, graphs, and other mathematical objects are also moved to a uniform layout at this time as necessary. Decisions on article order and cover emphasis are made by the Production Manager and the Editor at this time.

5. The Production Manager creates the draft layout for each article so that these can be assembled into the main layout document without any corruption of the mathematical content.

6. The Production Manager also collects supporting materials from internal and external sources, including advertisements, filler content, and AMATYC materials.

7. Articles are then sent to the layout artist, who creates the first draft with articles, ads, and most filler in place. <FBM 2012>

Proofing

The *MathAMATYC Educator* should be proofed before printing by the Journal Editor and Production Manager. The Publications Director will focus on items that are maintained by or impact the office – not technical content.

The proofing schedule for the *MathAMATYC Educator* is:

1. The Production Manager distributes PDF proofs of individual articles back to the authors for proofreading. The full PDF proof also goes out to the AMATYC proofreaders. Proofreaders include the authors, the Publications Director, the Advertising Chair, the Conference Coordinator, the Editor, the Review Editor, and others who may assist these individuals. Comments, corrections, and other suggestions are returned to the Production Manager to incorporate changes in the final proof. The Production Manager should consult with the Editor over questions pertaining to article content.

2. The final PDF proof goes to the printer. Printer proofs are reviewed by the Production Manager for approval before the actual printing.

3. The final printer proof is sent electronically by the Production Manager to the Editor, Publications Director, and Advertising Chair. Corrections and changes are submitted to the Production Manager. Once everything is in good order, printing, mailing, and posting on the AMATYC website may proceed. <FBM 2012>

Distribution

1. General permission is granted to educators to photocopy material from the *MathAMATYC Educator* for noncommercial instructional or scholarly use. Permission must be sought from the Editor in order to charge for photocopies, to quote material in advertising, or to reprint articles in other educational publications. Once permission is obtained, credit should be given to the source of the material by citing a complete reference.

2. In addition to paid subscriptions, presidents of mathematics organizations with whom we have reciprocity agreements will receive copies of the *MathAMATYC Educator*.

3. The library rate for the *MathAMATYC Educator* shall be the same as the regular membership rate.

4. Two complimentary copies of the *MathAMATYC Educator* should be distributed to all authors whose article has appeared in the edition. Additional copies of each issue should be made available to the office to handle periodic requests that are received. <FBM 2012>

5. Once the final draft is approved, the Production Manager will send a PDF to the Website Coordinator for uploading to the AMATYC website. The electronic version of the Journal will be made available on the website to members whose membership benefits include the Journal.

6. A bulk email to announce the release of each issue should be sent to all AMATYC members whose membership benefits include the Journal once the final draft is available on the AMATYC website.

7. All issues of the *MathAMATYC Educator* will be indexed in EBSCO.

12.3.2 Journal Editor <FBM 2007>

APPOINTMENT PROCESS

The Editor is recommended by the President and appointed by the AMATYC Executive Board.

TERM OF OFFICE

The term length is four years. <SBM 2010> The starting date of each term is in January following the end of the conference where the appointment is made, and the ending date is December 31. The term limit is two consecutive terms; exceptions may be granted by the Executive Board to waive the term limit for extenuating circumstances by a 2/3 vote of the entire Executive Board, or 9 votes. <FBM 2007>

QUALIFICATIONS

- Proficient in emailing, document management, and word processing.
- Competent in proofreading, writing, and grammar.
- Publishing and reviewing experience.
- Understand editing procedures.
- Willing to explore new ideas to enhance member satisfaction.
- Able to remain tactful and helpful to authors and reviewers, yet create and maintain a quality product within AMATYC policies.
- Possess excellent organizational skills and ability to manage document flow to ensure on-time publication of the Journal.
- Able to facilitate the on-time publication of 3 issues per year.
- Possess or willing to obtain a familiarity with the major laws concerning libel, copyright, invasion of privacy, and contempt.
- Able to view issues objectively and from the point of view of both AMATYC and AMATYC members.

- Exhibit a team spirit and a commitment to cooperation and collaboration.
- Possess the personal qualities of patience, sympathy, insight, breadth of view, sense of humor, imagination, interpersonal skills, objectivity, and the ability to remain calm under pressure.

DUTIES

1. Be responsible for all phases of the publication of the Journal, including the solicitation of articles and the editorial process.

2. Work with the Review Editor to select, edit, and develop articles for each issue.

3. Solicit ideas for and participation in themed issues.

4. Work with authors to finalize articles for publication.

5. Check references and quotes, verify sources. Make corrections to APA style as needed.

6. Work with the Production Manager to finalize the format of tables, graphs, and figures.

7. Assist the Journal Review Editor and Journal Production Manager as requested.

12.3.3 Journal Production Manager <FBM 2007>

APPOINTMENT PROCESS

The Production Manager is recommended by the President and appointed by the AMATYC Executive Board.

TERM OF OFFICE

The term length is four years. <SBM 2010> The starting date of each term is January 1 following the end of the conference where the appointment is made, and the ending date is December 31. The term limit is two consecutive terms; exceptions may be granted by the Executive Board to waive the term limit for extenuating circumstances by a 2/3 vote of the entire Executive Board, or 9 votes. <FBM 2007>

QUALIFICATIONS

- Proficient in emailing, document management, and word processing.
- Competent in proofreading, writing, and grammar.

- Publishing and reviewing experience.
- Understand editing procedures.
- Willing to explore new ideas to enhance member satisfaction.
- Able to remain tactful and helpful to authors and reviewers, yet create and maintain a quality product within AMATYC policies.
- Possess excellent organizational skills and ability to manage document flow to ensure on-time publication of the Journal.
- Able to facilitate the on-time publication of 3 issues per year.
- Possess or willing to obtain a familiarity with the major laws concerning libel, copyright, invasion of privacy, and contempt.
- Able to view issues objectively and from the point of view of both AMATYC and AMATYC members.
- Exhibit a team spirit and a commitment to cooperation and collaboration.
- Possess the personal qualities of patience, sympathy, insight, breadth of view, sense of humor, imagination, interpersonal skills, objectivity, the ability to remain calm under pressure.
- Helpful, but not required: An understanding of typesetting and/or knowledge of a typesetting program like Adobe InDesign.

DUTIES

1. Be responsible for developing the layout of each journal.

2. Review all articles, reports, and features of each publication and arrange for the typesetting and physical production of the final product.

3. Send a PDF file of the final draft of each issue of the Journal to the Website Coordinator and to EBSCO for indexing.

4. Coordinate the proofing, printing, and mailing processes for each issue.

5. Assist the Journal Editor and Journal Review Editor as requested.

12.3.4 Journal Editorial Panelists <FBM 2008><SBM 2021>

Composition

The Editorial Panel for the Journal will be made up of nine members: one member from each region and one member at large.

Appointment Process

The recommendations for regional members come from the Regional Vice-Presidents and the Journal Editors. The recommendation for the at-large member comes from the Journal Editors. The members of the Editorial Panel will be appointed by the President with approval from the AMATYC Executive Board.

Term of Office

The term of office of the Editorial Panel members will be 3 years. The beginning date of each term is January 1, and the ending date is December 31. The list of start years for the staggered terms for the various members is as follows:

Northeast, Mid-Atlantic, and Southeast Regions: 2023, 2026, 2029, …

Midwest, Central, and Southwest Regions: 2024, 2027, 2030, …

Northwest and West Regions and at-large member: 2025, 2028, 2031, …

Duties

1. Review manuscripts submitted for publication that pertain to each panel member's area of expertise and interest.
2. Make recommendations to the Editors concerning publication of reviewed manuscripts.
3. Work with the Editors to solicit articles and features from members at the AMATCY Annual Conference.
4. Work with the Editors to make recommendations and suggestions concerning policy, themes, content, and format changes to the Journal.

12.3.5 Publication Guidelines for *MathAMATYC Educator* <SBM 2013><SBM 2018>

MathAMATYC Educator

A refereed publication of the American Mathematical Association of Two-Year Colleges.

Publication Guidelines for Authors

The *MathAMATYC Educator* is a publication of the American Mathematical Association of Two-Year Colleges. Its purpose is to provide an avenue of communication for all mathematics educators concerned with the views, ideas, and experiences pertinent to teachers and students in the first two years of college.

Subject Matter: The editorial team of *MathAMATYC Educator* is interested in articles that focus on mathematics teaching and learning in the first two years of college. We are particularly interested in those articles that address issues pertinent to the following areas:

- Applications of the principles of AMATYC's Standards documents in the classroom
- Developmental mathematics and corequisite models
- Mathematics and its Applications for Careers
- Teacher Preparation
- Statistics and Data Science
- Innovative Instruction Practices including the use of technology in the classroom
- Mathematics content of the two-year college curriculum, in particular those courses in the first two years of a college mathematics major
- Research in mathematics education in the two-year college classroom
- Equal opportunity in mathematics
- Mathematics History
- Quantitative Reasoning and Math for Liberal Arts
- Online and flexible delivery approaches

We encourage articles that are research based and articles that offer practical applications that can be used in the classroom. All articles should be the original work of the authors and should not have been previously published in other journals. Authors are encouraged to offer personal opinions and suggestions. Letters to the Editor are encouraged and should comment on previously published articles or offer opinions on topics pertinent to mathematics education in the first two years colleges.

Technology: Technology-oriented articles should focus on technology used as a teaching aid or technology used as a mathematical tool. The major intent of an article should be to help the reader learn how to incorporate the technology into their teaching or a student's learning of a mathematical concept, not the promotion of a specific product.

Review Criteria: *MathAMATYC Educator* is a refereed publication. Three mathematics educators review each appropriate submission: two members of the review panel and a member of the Editorial Panel. The Editorial Panel member will analyze all reviews and make a recommendation to the Review Editor on the acceptance or rejection of an article. The Review Editor and Editor make final decisions on the publication of articles.

The following review criteria are used:

- Relevance to pedagogy or mathematical content in the first two years of college

• Significance of topics

• Originality

• Accuracy of content

• Explicit, clear, logical, and concise writing style

• Appropriate length and format

Regular Sections: Authors are invited to submit articles in the following areas:

- The Problems Section focuses on problems both for use in the classroom and in the area of recreational mathematics.
- “Use This Now” focuses on classroom activities and techniques. The articles in this section should include a short description of an activity or technique and how it is used in the classroom, how successful it was in promoting student learning and an original sample of the “classroom ready” activity.
- Media Reviews focuses on reviews of books and mathematical media (computer software, technology, books, films etc.).
- Letters to the Editor provides AMATYC members the opportunity to react to articles in past issues of the *MathAMATYC Educator* or to issues impacting mathematics in the first two years of college.

The Editor may choose to review articles submitted for the regular sections of the *MathAMATYC Educator*.

Manuscript Style: Articles may vary in length (typically under 6000 words). Brief, "to the point," articles are encouraged.

MathAMATYC Educator uses the latest edition of The *Publication Manual of the American Psychological Association* as its style reference. In particular, note that the author-date method is used for citations within the text, e.g., “Smith and Jones (1987) demonstrated that…”

The reference list at the end of the article should include only the sources that were used in the preparation of the article. References should be arranged in alphabetical order by the surname of the first author.

To provide for anonymous reviews, the author's name and affiliation should appear ONLY on a separate title page giving complete mailing address, voice and fax numbers, and email address. The title should also appear on the first page of the exposition.

Submission: To submit articles for possible publication, authors should use the electronic form on the AMATYC website, Publications page.

Additional publication guidelines for authors are maintained on the AMATYC website on the Publications pages.

12.3.6 Journal Review Editor <SBM 2017><SBM 2018>

Appointment Process

The Journal Review Editor is recommended by the President and appointed by the AMATYC Executive Board.

Term of Office

The term length is four years. The starting date of each term is January 1 and the ending date is December 31 of the following year. The term limit is two consecutive terms; exceptions may be granted by the Executive Board to waive the term limit for extenuating circumstances by a 2/3 vote of the entire Executive Board, or 9 votes.

Qualifications

- Proficient in emailing, document management, and word processing
- Competent in proofreading, writing, and grammar
- Publishing and reviewing experience
- Understanding editing procedures
- Willing to explore new ideas to enhance member satisfaction
- Able to remain tactful and helpful to authors and reviewers, yet create and maintain a quality product with AMATYC policies
- Possess excellent organizational skills and ability to manage document flow to ensure on-time publication of the Journal
- Able to facilitate the on-time publication of 3 issues per year
- Possess or willing to obtain a familiarity with the major laws concerning libel, copyright, invasion of privacy, and contempt
- Able to view issues objectively and from the point of view of both AMATYC and AMATYC members
- Exhibit a team spirit and a commitment to cooperation and collaboration

- Possess the personal qualities of patience, sympathy, insight, breadth of view, sense of humor, imagination interpersonal skills, objectivity, the ability to remain calm under pressure

Duties

1. Receive the author online submissions from the AMATYC office
2. Manage author contact info database
3. Manage contacts for peer reviewers
4. Edit manuscripts to blind review copies as needed
5. Assign manuscripts to peer reviewers
6. Receive returned review evaluations and suggestions from the reviewers
7. Work with the Editorial Panel that will help select, edit, and develop articles for each issue.
8. Pass completed review documents on to the Editor
9. Assist the Journal Editor and Journal Production Manager as requested

The Journal positions (12.3.2, 12.3.3, and 12.3.6) should have staggered terms.

Attachment D: Beyond Crossroads Chapter 6 (Motion was defeated)

Chapter 6

Curriculum and Program Development

Although mathematical truths may be timeless, the content of mathematics programs and courses continue to evolve, often as a result of rapid technological advances. This chapter focuses on the improvement of student learning in mathematics, statistics, and data science ~~-~~by developing, assessing, and improving ~~mathematics~~ courses and programs. The intent is not to prescribe specific ~~mathematics~~ course content but, rather, to emphasize key components of curricular design and development and encourage periodic review and revision of curricu~~-~~la with the goal of continuous improvement.

Mathematics departments will develop, implement, assess, and revise courses, course sequences, and programs to help students attain a higher level of quantitative literacy and link their learning to ~~achieve~~ their academic and career goals.

The Changing Curriculum

For the mathematics and statistics curriculum to stay current with the times and reflect the changes in the professional landscape, it must be dynamic. ~~Creating a responsive learning environment, assessing student learning, and improving student learning in mathematics, statistics, and data science requires a dynamic curriculum.~~ There are ~~a number of~~several factors that influence the content and organization of the ~~mathe- matics~~ curriculum.

- Advances in technology influence both *how* mathematics and statistics are ~~i~~ taught and *what* ~~mathematics~~ is taught. For example, in mathematics, the square root algorithm, and trigonometric tables are ~~rarely~~ no longer used~~today~~, whereas~~-~~ apps, software, spreadsheets, and graphing ~~technology~~ utilities are widely implemented~~used~~. In statistics and data science, statistical tables and graphing calculators have been replaced by web-based apps and statistical software that allow students to explore large, real-world data sets with both qualitative and quantitative variables. Mastery of these technologies is now expected in many industries where our students intend to work.
- Educational research provides information about how students learn mathematics and statistics. These findings should influence how courses ~~mathematics and statistics~~ are ~~is~~ taught and how curricula are designed. For example, a well-developed understanding of functions is a stepstone to Calculus and facilitates the transition to advanced mathematical thinking.
- To make informed decisions and understand issues, individuals ~~citizens~~ must be able to analyze data, reason with statistics, and understand mathematical models.
- The global economy has changed people's lives and the workplace. ~~The number of unskilled labor positions and jobs that require repetitive processes is decreasing. Conversely,~~ The~~the~~ need for employees who are innovative, can use technology, and are able to think critically is increasing. Many industries are moving towards automation and use of artificial intelligence. It creates the growing demand for trained technicians who can understand and support those automations.

- The demand for ~~number of~~ students choosing science, technology, engineering, or mathematics as a major, as well as a shortage of instructors in these areas, is affecting the nation's ability to compete in this global economy. In 2012, President's Council of Advisors on Science and Technology wrote, "The last decade has seen a serious shortage within the STEM workforce: projections indicate the need for approximately one million more STEM professionals than the U.S. expects to produce by 2022."
- The gap between students intending to graduate in a STEM field and those who earn a STEM degree has been widening through the years, one of the reasons being that students have to pass through the "weed-out classes" including Calculus. Bressoud, D. (2020). Talking about Leaving Revisited: Persistence, Relocation, and Loss in Undergraduate STEM Education. Book Review. Notices of the American Mathematical Society, 67(09), 1. https://doi.org/10.1090/noti2145

In response to these factors, faculty need to take the lead in careful, deliberate, informed curricular revision decisions. Research in mathematics and statistics education can provide helpful information to guide decision-making in curricular design. The challenge is to design curricula that address the needs of as many academic paths and disciplines as possible. To meet the diverse needs of all students mathematics departments need to collaborate with others (faculty in other disciplines, faculty in four-year institutions, business, and industry representatives) to determine appropriate mathematics outcomes. Once the outcomes are established, faculty must assess ~~access~~ the degree to which students meet those outcomes. ~~During the last decade~~Over the past fifty years, several key curricular issues have stimulated dialogue and educational research.

For example, since 1989, when it was suggested that "If it does nothing else, undergraduate mathematics should help students develop function sense...,"[2] considerable research has been conducted on what it means for students to have an understanding of function. Studies report that a well-developed understanding of function correlates closely with success in calculus, as well as facilitating the transition to advanced mathematical thinking.[3] In addition, faculty continue to search for methods to develop a student's under- standing of the concept of variable. Students who are able to view variables as representing quantities whose values change dynamically along a continuum have been shown to have ready access to fundamental ideas, such as rate of change and limits, and exhibit higher levels of achievement in mathematics.[4]

There have also been lively discussions about what is the appropriate content of general education mathematics, college algebra, and precalculus. For example, do students need to analyze data and construct appropriate models of real-world phenomena? If so, then curricula need to be designed so that students understand the difference between a constant rate of change (additive, linear) and a constant growth factor (multiplicative, exponential). While learning to distinguish between the two processes, students develop fluency in pattern recognition, data analysis and proportional reasoning.[5] These discussions, within a department, institution, or professional organization are valuable professional development opportunities for all. Faculty and departments are encouraged to continue discussions, consult mathematics education research, and consider educational innovations when designing a curriculum.

The goal and challenge for faculty is to create courses and programs that empower students to become confident and competent problem solvers. Courses should provide opportunities to develop the quantitative skills they will need in their academic work, in society, and in the workplace. The dynamic nature of the curriculum requires a continuous reexamination of how, what, and when mathematics content is taught. The focus of curricular development should be on the mathematics content that is most appropriate for student learning.

The *Beyond Crossroads* Implementation Cycle can be applied to curriculum development, outlining a process for identifying goals, assessing strengths and weaknesses, and implementing curricular change as shown in Figure 3.

Figure 3 The Curriculum Implementation Cycle (Figure Edits)

4. Analyze and evaluate the collected data and decide to adopt, adapt or abandon different strategies.

6. Document results and use the results to outline any needed curricular and instructional changes.

Quantitative Literacy

The use of quantitative ideas and language is pervasive in society, news stories, scientific reports, and advertising. Because information is often presented in a variety of representations—words, symbols, tables, or graphs—individuals need to be able to interpret, analyze, and draw conclusions about information presented in these forms. It is important that all ~~citizens~~ members of our society have an understanding of the magnitude of numbers, be able to compute and apply percentages, and apply the basic concepts of statistics. In order to be informed consumers, to interpret economic and political trends, or to evaluate health risks of new drugs or treatments, individuals need to understand basic concepts of proportionality, linear and exponential growth, and elementary descriptive and inferential statistics. While entry level jobs may not require significant quantitative reasoning, higher levels of quantitative literacy may be needed to keep open the doors to job advancement.

For these reasons, quantitative literacy should be an outcome of all programs within the college. While most professionals agree on the need for quantitative literacy for all students, there are variations in terminology and definition. Quantitative literacy, quantitative reasoning, numeracy, and mathematics across the curriculum all share many common components. Definitions of quantitative literacy outline student outcomes that range from acquiring specific mathematical skills to gaining mathematical confidence. Quantitative literacy may include the following:

- The ability to apply aspects of mathematics (including arithmetic, measurement, data representation, number sense, variables, geometric shapes, spatial visualization, and probability~~chance~~) to understand, predict, and control routine events in people's lives;[6] the ability to apply arithmetic operations, either alone or sequentially, in many contexts including ~~balancing a check- book~~budgeting, understanding loans, and completing tax forms.[7]
- The ability to apply aspects of mathematics (including arithmetic, measurement, data representation, number sense, variables, geometric shapes, spatial visualization, and probability~~chance~~) to understand, predict, and control routine events in people's lives;[6] the ability to apply arithmetic operations, either alone or sequentially, in many contexts including ~~balancing a check- book~~budgeting, understanding loans, and completing tax forms.[7]
- Statistical reasoning skills and the comfort and confidence to deal with fundamental quantitative problems using critical thinking and problem-solving skills.
- Knowledge of the power and utility of mathematics and how it has shaped civilization.[8]

Acknowledging that more than one definition exists, *Beyond Crossroads* accepts the definition of quantitative literacy presented in the basic principle for quantitative literacy in Chapter 2: an individual's "capacity to identify, understand and engage in mathematics as well as make well-founded mathematical judgments as a constructive, concerned and reflective citizen."[9] Quantitative literacy includes "five different dimensions of numeracy: *practical*, for immediate use in the routine tasks of life; *civic*, to understand major public policy issues; *professional*, to provide skills necessary for employment; *recreational*, to appreciate and understand games, sports, and lotteries; and *cultural*, as part of the tapestry of civilization."[10] While the specific definitions may vary, quantitative literacy is an important general education outcome for every college student. Thus, quantitative literacy outcomes should be woven into every mathematics course and as many other college courses as possible.

Quantitative literacy is more about habits of mind than specific mathematical content. Therefore, the responsibility for developing quantitative literacy, like writing across the curriculum, is shared by the entire college faculty. However, mathematics faculty should lead the quantitative literacy movement by helping to establish a set of outcomes expected of students in each program. There are some outcomes expected of all students.

Students in all college programs will be expected to do the following:

- exhibit perseverance, ~~ability~~growth mindset, and confidence to use mathematics to solve problems
- perform mental arithmetic and use proportional reasoning
- estimate and check answers to problems and determine the reasonableness of results
- use geometric concepts and representations in solving problems
- collect, organize, analyze data, and interpret various representations of data, including graphs and tables
- use a variety of problem-solving strategies and exhibit logical thinking
- use basic descriptive statistics
- understand sampling and statistical bias
- utilize linear, exponential, and other nonlinear models as appropriate
- communicate findings both in writing and orally using appropriate mathematical language and symbolism with supporting data and graphs
- work effectively with others to solve problems
- demonstrate an understanding and an appreciation of the positive role of mathematics in their lives.

Actions to support this recommendation

Faculty and departmental actions:

- determine appropriate quantitative literacy outcomes for each mathematics course and include these outcomes in course outlines
- assume a leadership role in experimenting with new instructional materials to develop quantitative literacy and evaluating and sharing the results
- promote mathematics across the curriculum and positive attitudes by all faculty and students towards mathematics
- initiate collaborations with faculty from other disciplines to promote the integration of quantitative literacy in all programs at the college.
- discuss course content and uses of technology in the mathematical sciences.

Institutional actions:

- promote general education outcomes that include quantitative literacy

- provide opportunities for continuing conversations throughout the college on student outcomes in quantitative literacy
- support faculty from all disciplines in developing and implementing courses that integrate quantitative literacy.

Developmental Mathematics Courses and Programs

Developmental mathematics courses in this document are defined to be courses below the level of the first mathematics course that earns full college credit at the institution. For most two-year colleges, this includes mathematics courses below the level of intermediate or college algebra.

Developmental mathematics courses, to a greater extent than other mathematics courses, serve students with various degrees of success in previous mathematics courses. Appropriate student placement is crucial for developing positive attitudes and maximizing success. The goals of a solid preparation in basic mathematics and swift progress through the curriculum can be compatible. Substantial changes to traditional developmental mathematics curricula, which were derived primarily from high school curricula, need to be implemented. The developmental mathematics program needs to be designed to accomplish agreed-upon goals designed with input from stakeholders, using instructional strategies appropriate for ~~diverse student learning styles and diverse teaching styles~~all learners. In order to help students who have not previously been successful in mathematics and to implement the recommendations in this report, faculty need to do *more* than teach the same mathematics again.

The desired student outcomes for developmental mathematics courses should be developed in cooperation with the partner disciplines. The content for these courses also should address mathematics anxiety, develop study and workplace skills, promote ~~basic~~ quantitative literacy, and create active problem solvers. The curriculum of developmental mathematics programs should do the following:

- develop mathematical knowledge and skills so students can successfully pursue their career goals, consider other career goals, and function as successful citizens
- develop students’ study skills and workplace skills to enable them to be successful in other courses and in their careers
- help students progress through their chosen curriculum supports students progress through their chosen curriculum and reach successful completion~~as quickly as possible~~.

Teaching a developmental mathematics course presents unique challenges. Each instructor needs to provide a positive, nurturing experience for each student. Students need to develop time-management skills and study habits. They should engage in activities to help them view mathematics as interrelated concepts of a formal system, not just as unrelated facts to be memorized. While students need skills such as solving proportions, they also need to *understand* the concept of proportion and recognize its application in their lives and careers. Students should be able to approach mathematics through contextual, concrete, and abstract situations; apply mathematical skills to solve problems; and be able to transfer their knowledge to new situations. Students should experience multistep problems and be comfortable working in groups and doing collaborative projects. They also should have successful experiences using various technologies as tools to collect, organize, and analyze data, as well as to recognize numerical and graphical patterns.~~using technology, including calculators, spreadsheets, and other computer software, as a tool to collect, organize, and analyze data, as well as to recognize numerical and graphical patterns.~~

Topics in developmental mathematics courses should be taught in depth and not as a preview of topics to come in later courses. For many students, any given mathematics course could be their last one. Some algebraic topics, such as factoring, radicals, and operations with rational expressions, should receive less attention, while modeling, communication, and quantitative literacy and reasoning should receive more attention. Topics in algebra, geometry, statistics, problem solving and experience using technology should be integrated throughout developmental courses. However, students should still be expected to perform single digit arithmetic, without the support of technology~~the use of a calculator~~. In addition to the quantitative literacy outcomes and workplace skills expected of all students, there are some global outcomes that are expected of all developmental mathematics students.

Developmental mathematics students will be expected to do the following:

- apply strategies to manage mathematics anxiety
- develop mathematical skills needed to complete other courses successfully
- gain confidence in doing mathematics and solving real-world problems.

Actions to support this recommendation

Faculty actions:

- design courses and classes to produce desired student outcomes in developmental mathematics
- be actively involved in student placement to ensure each student is placed appropriately
- be sensitive to the impact of mathematics anxiety on students and employ strategies to control, manage, and reduce student anxiety
- provide opportunities to develop student confidence in mathematics and problem solving
- demonstrate and encourage multiple problem-solving strategies using appropriate tools from algebra, geometry, and statistics
- seek ways to integrate technology into developmental mathematics courses as a tool to investigate and promote understanding of mathematical concepts.

Departmental actions:

- create developmental mathematics courses and programs for students who only need to refresh their knowledge of basic concepts
- create developmental mathematics courses and programs for students who are taking develop- mental mathematics for the first time
- collaborate with faculty from other disciplines to ensure the student outcomes for develop- mental mathematics courses are appropriate.

Institutional actions:

- provide appropriate support services for mathematics students
- provide professional development for mathematics faculty focusing on teaching developmental mathematics.

General Education Mathematics Courses

For many students, a general education course such as logic, statistics, liberal arts mathematics, finite mathematics, or discrete mathematics may be the only mathematics course required for graduation. A general education mathematics course may not be a prerequisite to any subsequent course, but a prelude to the student's experiences as a productive employee and informed, quantitatively literate citizen. As a result, it is critical that general education mathematics courses exemplify the principles and standards of this document. A general education mathematics course may mold students' opinions of mathematics for the rest of their lives. These courses should pay particular attention to influencing positively student attitudes toward mathematics.

General education courses should include the important general education outcomes of writing, critical thinking, and quantitative literacy. While the course goals and student outcomes may vary from program to program, all general education courses in mathematics should require students to synthesize, make connections, and use ~~basic~~ mathematical knowledge to solve real-world problems. This synthesis may occur in a variety of mathematical contexts through exploration, discovery, and problem solving. A course may be designed to focus on mathematics as a language used to describe relationships and patterns. Another course might examine how one quantity varies with another (especially in linear, quadratic, and exponential relationships using real-world data) through a study of functions, geometric patterns, or statistics. Many kinds of investigations, such as using real-world data, integrating algebraic or geometric structures, or studying statistics, could be used as the core of a general education mathematics course.

In addition to the quantitative literacy outcomes expected of all students, the following are expectations of general education students.

General education mathematics students will be expected to do the following:

- use mathematics and technology to investigate, model, and solve a variety of real-world problems
- use a variety of problem-solving methods
- use mathematics to write and communicate in their discipline
- view mathematics as a language to describe relationships and patterns
- synthesize their mathematical knowledge.

Actions to support this recommendation

Faculty actions:

- collaborate with faculty from other disciplines to determine learning outcomes for general education mathematics courses
- develop and offer mathematics courses to meet general education requirements that model basic principles and standards of this document
- demonstrate the use of technology to find patterns, test conjectures, and discover properties.

Statistics Courses (New)

Introduction

The interdisciplinary nature of statistics courses and data science programs requires instructors and administrators to ensure students are presented with current and relevant coursework. Instructors in these areas should be supported as they incorporate modern teaching strategies, new technology, and advances in research-based classroom practices. Statistics courses and data science programs rely on each other in many ways. Accordingly, the discussion of these content areas is also woven together in this section.

Statistics Courses

Introductory Statistics is growing in popularity due to the omnipresence of data. Data drives decisions in all fields of study. In addition, computing technology supports deeper analysis that allows students to focus on interpretation of statistics and data visualizations rather than just computation. Statistics courses should always follow the Guidelines for Assessment and Instruction in Statistics Education (GAISE) which have been endorsed by AMATYC. The GAISE report endorses six recommendations for the introductory statistics course:

Teach Statistical Thinking: Broadly, this means that students should see statistics as a process rather than a series of disconnected topics. Statistics is a tool for making informed decisions. In addition, students should recognize the complexity of the world we live in and be able to use data to answer difficult questions. For example, students should be exposed to:

- sampling variability and the role it plays in our ability to draw conclusions from data and asses the associated risk of error
- multivariable thinking such as Simpson's Paradox, the idea that apparent associations can invert or go away when a third variable is introduced to a study.

Focus on Conceptual Understanding: Rather than focusing on computation, students should develop a conceptual understanding that will allow them to answer statistical questions using appropriate data and techniques. Students should also be able to interpret and communicate the results of statistical analyses. Conceptual understanding will allow students to know which tools are suited for different circumstances. For example, rather than asking students to create a specific graphical display, ask them to choose an appropriate visualization that allows them to answer a statistical question and communicate their results.

Integrate Real Data with a Context and Purpose: Data is all around us. Students should be exposed to interesting and relevant data throughout the introductory course. Data sets brought into the course should include the context that explains how and why the data were obtained.

Foster Active Learning: Active learning methods allow students to discover and understand statistical concepts. Research has shown that we "learn by doing". Incorporating class activities that allow students to explore statistical concepts engages students in the learning process.

Use Technology to Explore Concepts and Analyze Data: Today's computing power provides many opportunities for students to develop statistical thinking and understanding of statistical concepts. For example, an applet is a powerful tool for introducing students to sampling distributions and for understanding the meaning of level of confidence associated with a confidence interval. Statistical software provides an opportunity for students to analyze rich data sets that contain both qualitative and quantitative variables. This allows students to see the power of statistics and focus on interpretation rather than computation *in ways a graphing calculator cannot*.

Use Assessments to Improve and Evaluate Student Learning: Assessments that allow an instructor to evaluate student understanding of concepts should be developed. For example, not only do we want students to know how to obtain a *P*-value, we want them to interpret it and explain how it measures strength of evidence against the statement in the null hypothesis. Therefore, instructors should develop formative assessments that allow for feedback prior to higher-stakes summative assessments.

Statistics students will be expected to do the following:

- Recognize statistics as a process. The process includes (1) formulating questions, (2) collecting data, (3) analyzing data, (4) interpreting results.
- Become critical consumers of statistical results. Students should ask how the data and results were obtained, and if additional variables were considered.
- Collect and organize data and interpret various representations of data, including graphs and tables.
- Select appropriate methods for answering a statistical questio.n
- Communicate results of data analysis and the methods used, both orally and in writing, in basic terms to various audiences and to visualize results in an accessible manner.
- Interpret and draw conclusions from standard output from statistical software packages.
- Utilize statistical models and multivariable thinking to tell an accurate story of the relationship between variables.
- Demonstrate an awareness of ethical issues associated with sound statistical practice.

Actions to support this recommendation

Faculty actions:

- Collaborate with faculty from other disciplines to determine how statistics is utilized in their areas.
- Attend professional development workshops and conferences to learn the recommendations for content and pedagogy in introductory statistics courses.
- Use curricula, teaching practices, and assessments that support an investigative process of problem-solving and decision-making.
- Encourage active student learning and collaboration with collaborative projects, portfolios, research, field investigations, and/or internships.
- Use current and emerging technology tools to overcome the limitations of a graphing calculator throughout curricula. These tools allow students to explore authentic data, develop conceptual understanding, and develop appropriate technology skills.

Departmental/Institutional actions:

- Provide professional development funding to encourage statistics faculty to implement the GAISE recommendations and improve their teaching practices.
- Promote and support the use of current and emerging technology tools.
- Be sufficiently flexible to accommodate varying program needs and student goals.

Data Science Programs (new)

Data science is a new and evolving field, which requires computational, statistical, and mathematical thinking as well as skills in communication and a deep understanding of ethical implications surrounding the data lifecycle. Data science programs are highly interdisciplinary in nature, attracting students across all disciplines including the sciences, business and finance, communications, social sciences, and health care. Data science programs provide students with opportunities to explore, transform, and analyze multifaceted and complex datasets to communicate insights to various audiences. They learn how to use tools such as R, Python, SQL, GitHub, and Tableau in the full data cycle, from data collection and data wrangling to creation and delivery of data-driven visualizations and applications. Students analyze and manipulate various sizes of datasets. In addition to developing students' data literacy and data acumen (exceptional discernment and judgment), these data science programs should provide necessary quantitative, statistical, and analytical skills within the context of using authentic datasets. After completing a data science certificate or associate's degree, students should have marketable skills.

Institutions might encounter a number of challenges in developing their data science programs. They must update their curricula and stay in touch with current trends, hire faculty capable of teaching the courses, provide professional development for current faculty, recruit and retain a diverse student body, and ensure courses either transfer to four-year institutions or allow students to directly enter the workforce.

Colleges offering data science programs have the responsibility of determining the needs of their local businesses and industries and preparing students to meet these needs. Employers value thinking skills, decision-making, creativity, problem-solving, visualizing and reasoning spatially, and knowing how to learn—as well as personal qualities such as responsibility, self-management, and team skills. Employers need college graduates with reading, writing, speaking, and listening skills, as well as an understanding of ethical implications in the data lifecycle. Determining which mathematics courses best fit in data science programs is another challenge. Many data science certificates incorporate low barriers to course entry by either requiring no prerequisites or an introductory statistics course. On the other hand, an associate's degree in data science might require statistics, calculus, and linear algebra skills, especially if the degree transfers to a four-year bachelor of science program.

Data science students will be expected to do the following:

- Assess different analysis and data management techniques and justify the selection of a particular model or technique for a given task.
- Carry out analyses of large and disparate datasets and construct models necessary for these analyses.
- Demonstrate competency with programming languages and environments for data analysis.
- Summarize and communicate findings of complex analyses in a concise way for a target audience using both data visualizations and statistical measures.
- Evaluate and apply ethical principles and practices throughout the data lifecycle.

Actions to support this recommendation

Faculty actions:

- Consult with representatives from business, industry, and technical disciplines and use their input to keep course content relevant.
- Incorporate workplace skills as an integral part of curricula.
- Encourage active student learning and collaboration with collaborative projects, portfolios, research, field investigations, and/or internships.
- Use technology throughout curricula to discover properties, develop concepts, and examine multiple perspectives.
- Give students experience with the technology skills they will use routinely in the workplace.

Departmental/institutional actions:

- Provide professional opportunities for math and statistics faculty to develop the ability to teach data science courses.
- Provide support for the development and continuous improvement of new data science programs
- Partner with local industries, businesses and governmental organizations to provide relevant experiences for their data science students.

Technical and Career Courses and Programs

Mathematics courses in technical programs include topics from arithmetic through calculus. In addition to providing necessary mathematical skills, these mathematics courses should build students' quantitative literacy, develop their ability to think and communicate mathematically, connect mathematics to real- world situations, and develop problem solving skills for working alone, as well as for working in teams.[11]

Colleges offering technical and career programs have the responsibility of maintaining the curricula contemporary to the needs of the industries their students pursue in order to prepare student to meet these needs. ~~determining the needs of their local businesses and industries and preparing students to meet these needs~~. Employers value thinking skills, decision-making, creativity, problem-solving, visualizing and reasoning spatially, and knowing how to learn—as well as personal qualities such as responsibility, self-management, and team skills. Employers need college graduates with reading, writing, speaking, and listening skills, as well as knowledge of basic mathematical concepts.[12] Designing technical courses with mathematics content for specific fields, with flexibility to be used by more than one major, is another challenge. For example, emerging technologies, such as those in the biotechnological fields, tend to require fewer algebraic skills, and more data analysis, modeling, statistics, and discrete mathematics

Technical mathematics courses and programs should be developed in collaboration with faculty from other disciplines and business and industry representatives to identify and address the mathematics content needs of specific program employers. Content in two-year technical mathematics courses should be selected because of its application to ~~a specific~~relevant technical fields~~ and the needs of specific employers~~. It should also be at a level equivalent to mathematics courses that transfer to four-year institutions. The direction of curriculum change in technical and career programs is to emphasize workplace skills within the classroom context and to develop flexible thinkers who can work collaboratively to solve new problems. In addition to quantitative literacy outcomes, technical and career students have unique expectations from their respective programs.

Technical and career students will be expected to do the following:

- develop the mathematical concepts necessary to succeed in their chosen program
- use technology to explore and analyze problems
- analyze and model data from their career fields and use these models to solve problems
- be able to use mathematics to communicate orally and in writing
- develop workplace skills including collaborative problem-solving skills.

Actions to support this recommendation

Faculty actions:

- consult with representatives from business, industry, and technical disciplines and use their input to keep course content relevant
- incorporate workplace skills as an integral part of curricula
- encourage active student learning and the development of team-building skills with term projects, collaborative projects, portfolios, research, field investigations, or internships
- use technology throughout curricula to discover properties, to develop concepts, and to examine multiple perspectives
- give students experience with the technology skills they will use routinely in the workplace.

Departmental/institutional actions:

- provide professional development for faculty that focuses on technical and career mathematics courses and programs
- provide support for faculty in seeking outside funding to support the technology appropriate for the curriculum.

Teacher Preparation Courses and Programs

Many two-year colleges have the preparation of teachers as part of their mission.~~[13]~~ Many future teachers take most, if not all, of their college-level science and mathematics courses at two-year colleges.[13] Two-year colleges enroll a large proportion of the nation’s underrepresented groups and can assume a key role in recruiting minorities to the teaching profession. Positioned between K–12 schools and four-year colleges, two-year colleges can play an important role in promoting collabo- ration in a variety of issues, such as articulation and transfer, curriculum development, financial support for students, use of technology, program requirements, statewide teacher licensure requirements, and professional assessments.[14] Because of these factors, two-year colleges play a pivotal role in the recruitment and preparation of teachers.

To be effective teachers of mathematics, “Prospective teachers need mathematics courses that develop a deep understanding of the mathematics they will teach.”[15] Courses for prospective teachers should develop the habits of mind of mathematical thinkers and demonstrate flexible, interactive teaching styles. They should demonstrate the role of technology to explore ideas and promote concept development. They also should present the fundamental ideas of school mathematics and be taught by mathematicians who have a serious interest in teacher education. All mathematics courses taken by future teachers of mathematics should be standards-based, use strategies that have demonstrated success for students, and incorporate the NCTM's *Principles and Standards for School Mathematics*.[16]

Some of the courses taught at two-year colleges for prospective teachers of mathematics are addressed in the report *The Mathematical Education of Teachers*.[17] This report includes the following recommendations to mathematics departments regarding both the content and delivery of the curriculum.

- Prospective elementary grade teachers will take at least nine semester hours on the fundamental ideas of elementary school mathematics.
- Prospective middle school mathematics teachers will receive training designed specifically for future middle school teachers, which includes at least twenty-one semester hours of mathematics, including at least twelve semester hours on fundamental ideas of school mathematics appropriate for middle grades teachers.
- Prospective high school teachers of mathematics will complete the equivalent of an undergraduate major in mathematics, including a six-semester hour capstone course connecting their college mathematics courses with the high school mathematics curriculum.

Mathematics courses must emphasize the connections within mathematics, especially connections with the mathematics that is already familiar to the students. The courses also should illustrate the connection between mathematics and other disciplines. Mathematics instruction for future teachers should model informed teaching practices. These practices include setting high expectations for all students, integrating concepts, actively engaging students in the learning process, emphasizing problem solving and reasoning mathematically, and expecting students to reflect on their learning and to communicate mathematically.

Prospective teachers should have intensive courses in effective teaching methods in mathematics.[18] Included in these courses should be a discussion of interactions between the learner and the instructor, among learners, and between learners and the content they are trying to master. Whole group, small group, and individual work should be utilized. Instructors should integrate assessment into instruction and use multiple assessment techniques.

Teachers tend to teach the way they were taught and many school children are concrete learners. Therefore, future teachers—especially future elementary teachers—need preservice experience using manipulatives as a tool to teach mathematics. Manipulatives help develop conceptual understanding and assist students in discovering underlying procedures. Future teachers need experience using the same manipulatives they will encounter in pre-K–12 classrooms. They also need to practice with using the Internet, spreadsheets, mathematics applets, and mathematics software, as tools to teach mathematics.[19]

In the first two years of college, prospective teachers need supervised experiences in classrooms to observe and practice what they are learning in their mathematics courses. These early experiences help students determine whether teaching is the right career choice for them. Fieldwork experiences prior to student teaching afford students the opportunity to begin to become reflective practitioners and evolve in their understanding of educational practices and issues as they analyze, synthesize, and summarize their experiences. Mathematics departments should coordinate with other disciplines to afford prospective teachers the opportunity to participate in early fieldwork experiences.

In addition to providing the first two years of a college-level teacher preparation program, many two- year colleges also offer a variety of other education-related programs. Examples include degree programs in paraprofessional education and early childhood development, professional development workshops and licensure renewal courses for teachers, and teacher licensure programs for professionals holding bachelor's degrees who desire to switch their careers. In some states, colleges formerly considered two- year colleges are now granting bachelor's degrees in high-need disciplines, such as mathematics or science teaching and health care. Recommendations about the mathematical preparation of future teachers also apply to those enrolled in other education-related courses and programs at two-year colleges. The expectations of future teachers extend beyond the quantitative literacy outcomes and workplace skills outlined earlier.

Students in teacher preparation programs will be expected to do the following:

- develop a deep understanding of the mathematics they will teach and of the teaching practices that result in students' learning of mathematics
- include the manipulatives and technology used in pre-K–12 mathematics classrooms appropriately when designing lesson plans
- communicate mathematical concepts clearly both verbally and in writing
- clarify their career goals through supervised field experiences.

Actions to support this recommendation

Faculty actions:

- model the appropriate use of manipulatives and technology
- use multiple assessment strategies to assess students
- include supervised field experiences for future teachers in some of the mathematics courses
- recruit students from underrepresented groups into the mathematics teaching profession.

Departmental/institutional actions:

- hire faculty with strong mathematics and education backgrounds to teach in teacher- preparation programs
- place teacher preparation as a high priority in the department and have these courses taught by faculty members who have teacher education as one of their primary interests
- provide opportunities for professional development field experiences in collaboration with area four-year institutions and school districts
- work with four-year institutions and state departments of education to develop post-baccalaureate teacher licensure programs.

Mathematics-Intensive Courses and Programs

Mathematics-intensive programs serve students who will major in mathematics or mathematics-dependent fields, including secondary mathematics education, business, computer science, engineering, and science. The demand for a mathematically educated workforce has grown, but the number of students majoring in mathematics has declined. It is essential that students, especially those from underrepresented groups, be provided with a supportive learning environment that encourages their enrollment and retention in mathematics-intensive programs.

A solid understanding of functions and proof is a critical component of students' mathematical foundation. Each student needs to develop an ability to work at an abstract level. Students should use rich applications from various disciplines to deepen their appreciation and understanding of the power of mathematics to model real-world phenomena. These applications can be used to promote active and collaborative learning, practice sustained effort, examine a variety of problem- solving techniques, and communicate mathematically by giving written or oral reports. Mathematics-intensive programs should increase students' understanding of the mathematics topics studied in calculus. The expectations of mathematics-intensive students extend well beyond the quantitative literacy outcomes expected of all students.

Mathematics-intensive students will be expected to do the following:

- develop an appreciation of mathematics as a whole and of the historical development of mathematics
- develop a solid understanding of functions from multiple perspective
- be able to use numerical, graphical, symbolic, and verbal representations to solve problems and communicate with others
- use technology as a tool for exploring mathematical concepts
- use a variety of mathematical models including curve fitting
- develop an ability to work with mathematical abstractions, analyze mathematical relationships, make plausible conjectures, projections, and develop proofs
- develop an understanding of concepts and skills needed for future mathematics courses or courses in related disciplines.

Actions to support this recommendation

Faculty actions:

- create courses and activities to promote students' ability to use multiple approaches or representations to examine mathematical concepts so that students develop ~~a better~~an understanding of connections among topics and improve their ability to work abstractly
- ~~require~~ implement group projects, group discussions, and explorations to promote the ability of students to use mathematical notation and terminology
- expect students to use various formats to communicate mathematical understanding~~communicate orally and with written reports~~
- use technology to promote student discovery, develop concepts, examine multiple perspectives, and give students experience with the technology skills that they will use in their careers
- work with instructors in other disciplines to develop learning communities that pair a mathematics class with a class in another department
- provide guest speakers from scientific fields for student mathematics clubs or for selected classes
- encourage student participation in activities that are offered by national professional organizations, such as AMATYC, MAA, NCTM and Mu Alpha Theta, and local professional organizations.~~encourage student participation in professional organizations through activities such as the AMATYC Student Math League, MAA student chapters, and Mu Alpha Theta mathematics organizations~~
- recruit students, including those from underrepresented groups, into mathematics-intensive programs and careers.

Conclusion

Mathematics courses and programs in the first two years of college need to develop students' quantitative and workplace skills and actively engage them in the mathematics they will encounter outside the class- room. Faculty may need to teach content that is *different* from what they were taught, teach *more* than they were taught, and teach *differently* than the way they were taught. Students should understand some of the big ideas of mathematics through a curriculum, a variety of problem-solving strategies, and significant projects that examine selected topics in depth. Students should have opportunities to demonstrate their mathematical knowledge, as well as their creativity in a variety of assessments including projects. When designing mathematics curricula, faculty and departments should consider the needs of each student, as well as the mathematical requirements of other courses and the workplace, and employ multiple approaches in instructional strategies. In addition, each course and program should be reviewed periodically for continuous improvement. The entire mathematics community needs to embrace continuous improvement in curriculum and program development as the process that can increase student learning.

Highlights Implementing the Standards for Curriculum and Program Development

Insert:

Curriculum and Program Development

Mathematics departments will develop, implement, assess, and revise courses, course sequences, and programs to support students attaining a ~~to help students attain a~~ higher level of quantitative literacy by~~and~~ linking their new learning to ~~achieve~~ their academic and career goals.

At a standards-based institution, the *faculty*

- integrate quantitative literacy outcomes into all mathematics courses and into coursework across all disciplines. collaborate with partner disciplines and business and industry to establish desired student outcomes.
- create courses and programs based on desired student outcomes. lead the periodic review and revision of an up-to-date curriculum.
- use technology throughout the curriculum to examine concepts from multiple perspectives, and to explore, discover, and develop technology skills needed in the workplace.
- teach developmental courses in depth and promote classroom and workplace skills.~~teach topics in developmental courses in depth (rather than a quick review of high school topics) and promote classroom and workplace skills.~~
- emphasize for general education students the connections among some of the big ideas of mathematics.
- collect, analyze, and model data from realistic applications in technical, career, and other mathematics courses.
- promote the zeal for mathematics in mathematics-intensive students by examining learning

objectives~~big ideas~~ in depth and using multiple approaches or representations to reveal the connections among these ideas and with topics outside of mathematics.

- expect all students to use the language and symbolism of mathematics to effectively communicate their understanding.~~communicate effectively with other students~~

At a standards-based institution, the *mathematics department* and the *institution*

- promote quantitative literacy outcomes across the curriculum and in general education courses.
- provide the facilities, support, and professional development for faculty to create, revise, and teach the curriculum.
- place teacher preparation as a high priority in the department and reflect this priority in hiring, course assigning~~class assignments~~, and professional development.
- continually review and revise curricula with input from two-year and four-year college faculty to maximize course transferability and access to additional educational opportunities.
- support actions to increase the number of students choosing mathematics-intensive or teacher preparation programs.

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