Mathematics Teacher Educator

A joint publication of

National Council of Teachers of Mathematics
and
Association of Mathematics Teacher Educators

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Mission

- Contribute to **building a professional knowledge base** for mathematics teacher educators that stems from, develops, and strengthens practitioner knowledge.
- Means for **practitioner knowledge to be shared** but also verified and improved over time.
- Tool to build the **personal knowledge** that mathematics educators gain from their practice **into a trustworthy knowledge base** that can be shared with the profession.

Audience

- Mathematics Teacher Educators
  - At 2-year colleges and 4-year colleges/universities
  - At institutions that focus on teaching
  - At research institutions
  - In mathematics departments and colleges of education
- Professional Development Providers
  - In school districts
  - In state education departments
  - In a wide range of agencies and organizations

September 2012, Volume 1, Issue 1

March 2013, Volume 1, Issue 2

September 2013, Volume 2, Issue 1

March 2014, Volume 2, Issue 2

- Use of Video Analysis to Support Prospective K-8 Teachers' Noticing of Equitable Practices *Amy Roth McDuffie, Mary Q. Foote, Corey Drake, Erin Turner, Julia Aguirre, Tonya Gau Bartell, and Catherine Bolson*

- Breaking Conventions to Support Quantitative Reasoning *Kevin C. Moore, Jason Silverman, Teo Paoletti, and Kevin LaForest*

- Improving Preservice Secondary Mathematics Teachers' Capability with Generic Example Proofs *Shiv Karunakaran, Ben Freeburn, Nursen Konuk, and Fran Arbaugh*

- Teacher Goals and Dilemmas in the Use of Mathematical Representations *Edd V. Taylor and Elizabeth Dyer*

On-Line Extras

Challenging Preservice Elementary Teachers' Image of Rectangles

Gayle Millsaps

Preservice elementary school teachers (PSTs) often have difficulty understanding hierarchical (i.e., class inclusion) relationships between geometric shapes. In particular, PSTs' predisposition to place squares and rectangles in separate categories can be attributed to their concept images. This study examines the benefits and limitations of using the Shape Makers curriculum unit to modify preservice teachers' concept images and their definitions of special quadrilaterals.

Online Extra:

Additional Online Geometer's Sketchpad File (ZIP)

Developing Teachers' Knowledge of a Transformations-Based Approach to Geometric Similarity

Nanette Seago, Jennifer Jacobs, Mark Driscoll, Johannah Nikula, Michael Matassa, and Patrick Callahan

U.S. students' poor performance in the domain of geometric transformations is well documented, as are their difficulties applying transformations to similarity tasks. At the same time, a transformations-based approach to similarity underlies the Common Core State Standards for middle school and high school geometry. The authors argue that engaging teachers in this topic represents an urgent but largely unmet need. The article considers what a transformations-based approach to similarity looks like by contrasting it with a traditional, static approach and by providing classroom examples of students using these different methods.

Online Extras:

Powerpoint Slides (ZIP)

Video 1 - Makayla and Victoria

Video 2 - Randy

Editorials

- *Mathematics Teacher Educator: An Opportunity to Share, Verify, and Improve (Volume 1, Issue 1)*
- *Linking Claims and Evidence (Volume 1, Issue 2)*
- *Revise and Resubmit: It's Not a Consolation Prize! (Volume 2, Issue 1)*
- *Building a Professional Knowledge Base (Volume 2, Issue 2)*

- Editorials are intended to be educative!
- Always available free
- Resources for authors and reviewers

Framing a Manuscript

- Identify a problem in mathematics teacher education practice that is shared by others.
- Situate the problem in the literature.
- Identify a solution that transcends your location.
- Provide evidence of the effectiveness of your solution.
- Discuss challenges you faced and how you overcame them.
- Suggest how other MTEs could begin to implement some aspect of the intervention you describe.

Possible topics

- Effective ways of influencing teachers' knowledge, practices, beliefs
- Use of broadly applicable tools and frameworks in various settings
- Programmatic issues
- External factors that impact MTE

Things that do not review well

- Description of TE or PD activity/course/ program with no results
- Results of TE or PD activity/course/program with no description of the intervention
- Research reports without connections to practice

Things that do not fit the journal

- Activities/lessons for PreK-12 learners
- Studies of learning in PreK-12 settings
- Studies of learning in math courses unless the learners are teachers
- Discussions of mathematics tasks

Evidence

Articles do not need to meet rigorous research criteria, but...

- Evidence is critical.
- Show that the intervention *works* in some sense.
- Evidence that the result is *better*, not just different.

Data Sources for Claims

- Data collection may not be planned *a priori* as in a research study.
- Data may be a by-product of the intervention (e.g., student work).
- Data analysis should be systematic.

Making Claims

- Be clear about the data sources.
- Direct evidence is stronger than self-report data.
- Don’t over claim beyond the data.

Examples of Articles

Describing a specific intervention

Mathematics Preservice Teachers' Learning About English Language Learners Through Task-Based Interviews and Noticing

by Anthony Fernandes

Describing a more general solution

Capitalizing on Productive Norms to Support Teacher Learning

by Laura Van Zoest & Shari Stockero

"Mathematics Preservice Teachers Learning About English Language Learners Through Task-Based Interviews and Noticing,"

by Anthony Fernandes

The Problem:
Preservice teachers are often under-prepared to support ELLs learning of mathematics in English-only classrooms.

Situating the Problem in the Literature:

- Language Demand for ELLs
- Use of Task-Based (*Student*) Interviews in Teacher Education
- (*The value of*) Noticing (*and reflection*) (*on PSTs' development*)

The Intervention:

- PSTs conduct 2 interviews with ELL students using measurement tasks from NAEP, and write reports of their findings.
- Feedback is provided following the first round of interviews, in response to PSTs' written reports.

7 Analysis: PSTs' written comments on:

- Linguistic challenges faced by ELL students, and
- the resources ELLs draw upon, as they learn mathematics and communicate their thinking in English only classrooms

1 Describes the course, participants, and where they are in their preparation as PSTs

2 Describes the specific phases of the intervention in detail

The manuscript provides sufficient detail to allow for verification, replication in other contexts, or modification by subsequent authors.

3 Provides the interview tasks and writing prompts

4 Provides a rationale for the tasks chosen for the interviews

6 DATA:

- Videotapes of 2 task-based interviews conducted by PSTs with ELLs
- PSTs' written reflections on the interviews, in response to specific interview prompts

5 Indicates what supports PSTs have throughout the process (guiding questions, feedback after the first round of interviews)

Nature of the Evidence

- Provides thorough evidence from data collected *directly from the intervention* (e.g., examples from the videotapes; PSTs' reflections on the interviews).
- Provides numerous and specific examples of PSTs' comments related directly to 1) ELLs' challenges and 2) use of resources.
  - Goes beyond PSTs' self-reports of enjoying or learning from the activity.
- Provides examples of specific strategies and interactions from the videotapes
  - Examples provide evidence of PSTs' use of practices that support ELLs
  - Connections between PSTs' comments and their interactions with students provide support for the author's interpretations
- Includes issues that were not resolved (e.g., math is universal language, deficit beliefs about ELLs and about use of native language).

New Contribution to the Knowledge or Practice of other MTEs

- Interview process helped PSTs consider strategies for their classrooms: in addition to developing awareness, preservice teachers also adopted strategies that were aligned with best practices for teaching ELLs outlined in the literature.
- Specifically addresses how others might use/ adapt the intervention.

"Capitalizing on Productive Norms to Support Teacher Learning"

by Laura Van Zoest & Shari Stockero

The Problem:

"No teacher education experience, no matter how well designed or thorough, will be sufficient to prepare teachers for all that they will face in their future classrooms."

Situating the Problem in the Literature:

- Defining norms:
  - social, sociomathematical, professional
- How others have looked at norms
- Why norms are important to mathematics teachers' learning

A Solution:

- Intentionally cultivate sociomathematical and professional norms in mathematics methods courses

7 Analysis:
Coded data for examples and counterexamples of specific socio-mathematical and professional norms

1 Describes the course, its sequence in the program, and the focus of the program and specific courses

2 Describes instructional materials, and identifies the specific socio-mathematical and professional norms they were designed to elicit.

The manuscript provides sufficient detail to allow for verification, replication in other contexts, or modification by subsequent authors.

3 Provides the specific task, and the rationale for selecting this task

4 Provides characteristics of the participants and the instructors

6 DATA:
Recordings of the group discussions.
Participants' written work: solutions to the mathematical task, predictions about potential student solutions, and reflections on the video cases and on the session overall.

5 Purpose: To understand how the cultivation of norms could support long-term teacher learning

Nature of the Evidence

- Focused on two norms, and how the evidence provided examples or counterexamples of those norms
  1. Mathematical Arguments: Evidence taken from participants written explanations to the specific task
  2. Supporting Claims with evidence: Evidence taken from comments from the transcripts (specific to the activity)

New Contribution to the Knowledge or Practice of other MTEs

- Used the examples and counterexamples to illustrate how cultivating norms can:
  - support teacher learning (MKT)
  - support teachers to view and analyze classroom practice in ways that encourage *Standards*-based instruction
  - prompt teachers to notice how the teacher in the video established the same norms for students (mathematical arguments and providing evidence)
- Specifically addresses how others might use/ adapt the "solution"

Review Criteria

The manuscript contains:

- a description of the problem or issue of mathematics teacher education.
- the methods/interventions/tools used.
- a description of how the results were studied and documented.
- a description of how results apply to broader practice.

The manuscript also:

- connects to the existing knowledge base in mathematics teacher education.
- is grounded in theory and/or on previously published articles.
- provides sufficient detail to allow for verification, replication, and modification.
- goes beyond simple description to provide evidence of effectiveness.
- makes explicit the specific new contribution to our knowledge.

Accept

- Connects to the existing knowledge base in mathematics teacher education.
- Grounded in theory and/or on previously published articles.
- Provides evidence of the effectiveness of the innovation being described.
- Makes explicit the specific new contribution to our knowledge.
- Sufficient detail to allow for verification, replication in other contexts, or modification by subsequent authors.
- Clear and relevant implications for mathematics teacher education.
- Needs only minor copyediting, re-organization, additional examples, or additional references. It is essentially ready for publication.

Accept with Revisions

- Clearly within the scope of the journal, is generally well written, and has nearly all of the elements in the Accept category.
- May be missing one of the elements, but the rest of the manuscript is sufficiently robust that it is clear that the author has the capacity to make the changes.
- May need restructuring, clarification, highlighting/ lowlighting particular points, adding a few points, or eliminating a few points, but the core of the article is there.
- Needs "editing plus," but the editor can assess whether the changes have been made without sending it out for review again.

Revise and Resubmit

- The manuscript is not acceptable in its current form as it is missing more than one essential element
- The manuscript has enough potential to warrant the effort and time of authors, editor, and reviewers to revisit it.
- The manuscript addresses a substantial idea that targets a central issue for the MTE audience and the reviewers offer clear and specific suggestions for improvement. Part, but not all, of the core of the article is there.
- It is clear that the author has the potential to successfully revise the manuscript. The weight of what needs to be fixed is doable; it does not need to be an entirely new manuscript. It will need new writing, taking some things out, and/or reframing. As the core gets refined, the manuscript could shift to be outside of the scope of *MTE*.
- "Revise and Resubmit" is not a default rating or a 'consolation' evaluation. It is only given when the proposed changes seem doable and a complete rewrite of the manuscript is not needed.

Revise and Resubmit

- A detailed letter from the editor with criteria that must be met before further review is sent to the first author of the manuscript.

- The revised manuscript is re-sent to one reviewer from the first round and two new reviewers, all of whom will receive the editor's decision letter, the initial reviews, and the letter from the author detailing how they have addressed the desired revisions.

Reject

- Missing essential elements or the elements are treated weakly. For instance, the paper may lack compelling evidence, may not be appropriate for the audience, or may lack clear implications for mathematics teacher educators.
- May contain a nugget of a good idea, but it needs to be an entirely different paper to fit *MTE*. There may be multiple directions the manuscript might take when rewritten because the weight of what needs to be fixed is substantial.
- Needs to be *rewritten* substantially, not revised; it needs to be an entirely new manuscript. A revised manuscript could still miss the mark.
- Any resubmission stemming from rejection will be treated as a new submission.

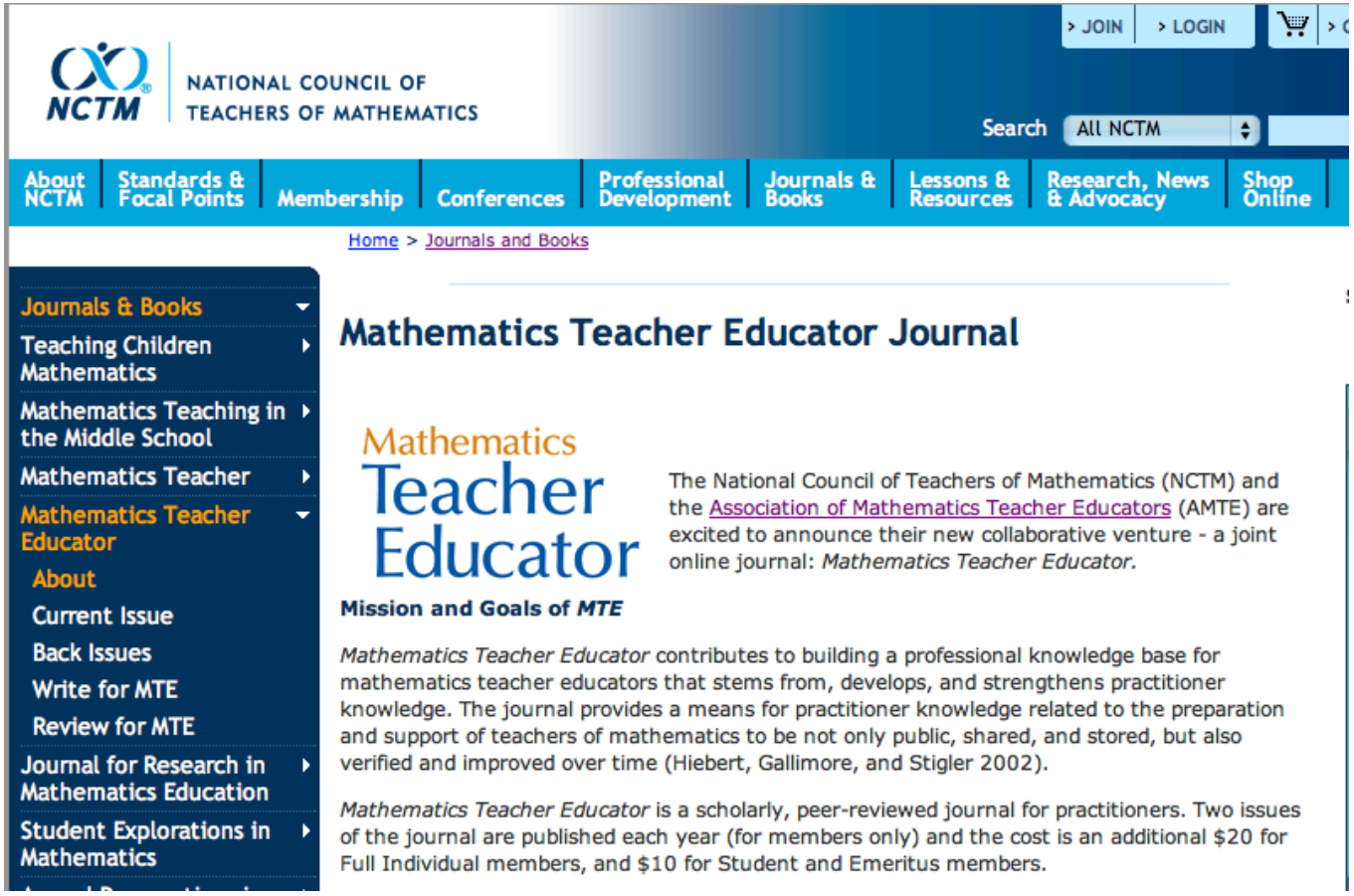
Current Statistics
(10-1-11 through 3-31-14)

- Manuscripts
  - 221 manuscripts submitted
    (208 original, 13 revisions)
  - 206 manuscripts with editor decisions
    - 23 (11.2%) accepted (12 revisions)
    - 15 (7.3%) revise and resubmit
    - 90 (43.7%) rejected
    - 78 (37.9%) deemed not appropriate for MTE
- Acceptance Rate: 11.2%

Current Statistics
(10-1-11 through 3-31-14)

- Submission to Decision – 71 days
- Time (Averages)
  - To Secure First Reviewer – 4 days
  - To Secure Final Reviewer – 14 total days
  - To secure all Reviews – 38 total days
- Reviewers:
  - 731 total reviewers in data base (62 new in 2014)
  - 224 reviewers assigned 406 reviews to date

NCTM MTE Page (about):

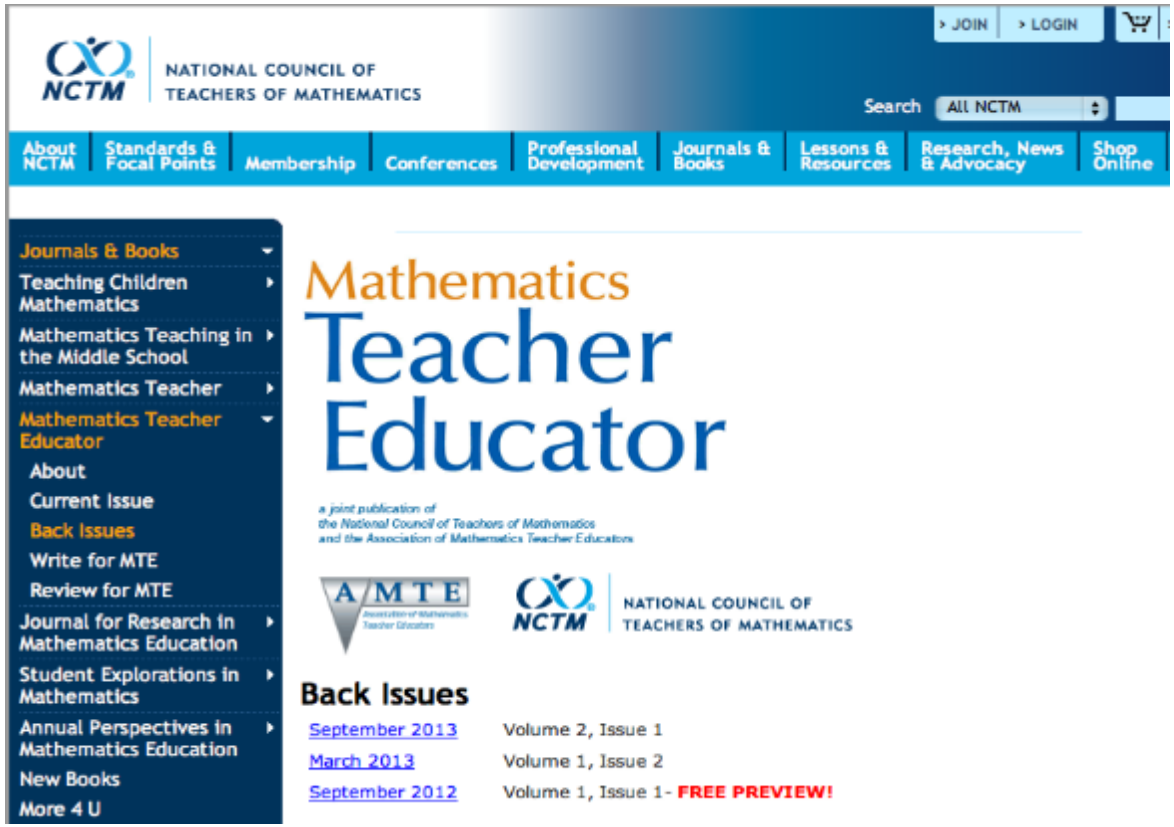


http://www.nctm.org/mte

AMTE MTE Page:

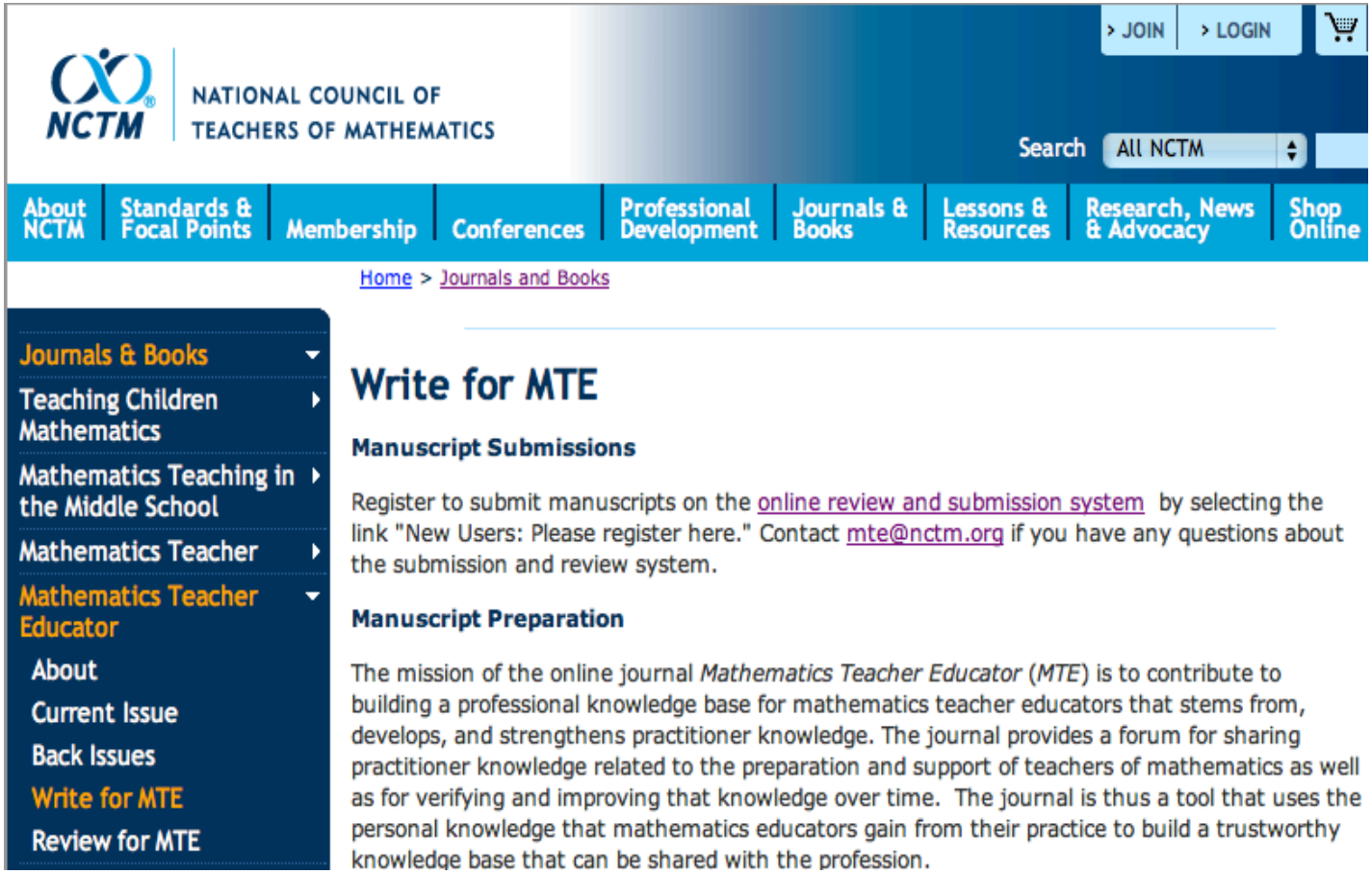
http://amte.net/publications/mte

Volume 1, Issue 1 available for free!



Vol 1 Issue 1:
http://www.nctm.org/publications/toc.aspx?jrnl=MTE&mn=9&y=2012

Be a writer



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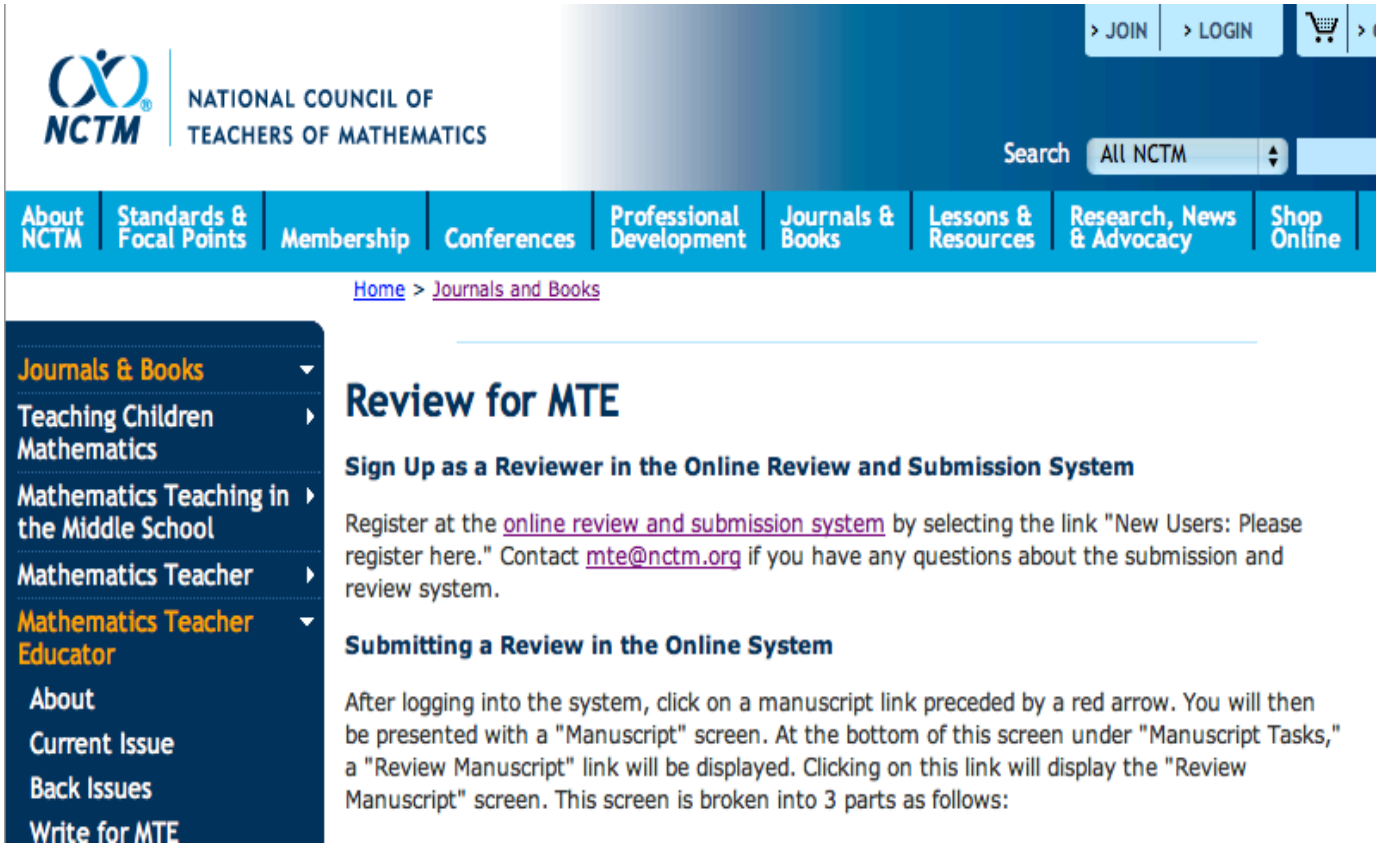
Be a reviewer:



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