Overview and Goals of the Book

We are soliciting manuscripts that share classroom activities of using technology in ways that support the equitable mathematics teaching practices (NCTM 2018). This book will share classroom activities that illuminate the role that technology can play in supporting equitable teaching practices (NCTM 2018). It will offer guidance on how to design mathematics instruction that incorporates technology and helps students develop positive mathematical identity and agency. Each chapter will feature a classroom activity connected to four key ideas:

- The role that technology is serving within the activity
- Content standards from the Common Core State Standards for Mathematics
- Content recommendations discussed in the Catalyzing Change series
- The equitable mathematics teaching practices discussed in the Catalyzing Change series

Are you using technology in ways that support the equitable mathematics teaching practices from the Catalyzing Change series? If so, please consider sharing your work. We are seeking four chapters from each grade band (elementary, middle, high school) that highlight technology’s role in supporting the equitable mathematics teaching practices. Although technology should be an integral part of the activity, the description of the activity should focus on how the technology is being used (e.g., monitoring and assessing mathematical learning, generating, organizing, and analyzing data) rather than the technology itself (e.g., spreadsheets). Ideal proposals will include current classroom teachers as members of the writing group and evidence of classroom implementation.

Book Editors
Craig J. Cullen (Illinois State University) and Joshua T. Hertel (University of Wisconsin–La Crosse)

Intent to Submit a Manuscript (Due March 1, 2022)
Potential authors are highly encouraged to complete the Intent to Submit form. Potential authors who file an intent to submit will receive feedback from the editors. The form will ask you to provide author information, relevant grade band, CCSSM Standard(s), mathematical action technology, mathematics teaching practice(s), the primary way that the mathematical action technology is being used, mathematical objectives of the activity, a brief description of the activity, and a description of how the use of technology is supporting equitable mathematics teaching through the development of positive mathematical identity and agency. Potential authors can use the example chapter proposal provided below in preparing their submission.

Full Manuscript Due Date October 15, 2022
Manuscripts should be submitted according to the NCTM Author Toolkit found here. Submit your chapter here.
Guidance for Full Manuscript Preparation

Manuscript should be—
- approximately 10–12 pages long, including figures, tables, and references (~2,500 words);
- double-spaced, 12-point font, 1-inch margins, include page numbers;
- organized with headings and subheadings; and
- closely proofread prior to submission.

Manuscript should:
A. Highlight at least one mathematics teaching practice from Principles to Actions: Ensuring Mathematical Success for All (NCTM 2014).
B. Identify the mathematical action technology used in the activity (Dick and Hollebrands 2011; McCulloch et. al. 2021).
C. Discuss the primary way the mathematical action technology is being used in the activity (Cullen, Hertel, and Nickels 2020):
   1. Serving as a Tutee: Decomposing, abstracting, and encoding mathematical procedures and processes
   2. Promoting Cycles of Proof: Creating, testing, revising, and proving mathematical conjectures
   3. Supporting Case-Based Reasoning: Generating, organizing, and analyzing data
   4. Presenting and Connecting Multiple Representations: Presenting and connecting representations of the same mathematical object
D. Describe how the use of technology supports equitable mathematics instruction through the development of positive mathematical identity and agency (NCTM 2018, pp. 25–34).
E. Provide evidence of implementation (e.g., student work, classroom video).

Additionally, potential authors may highlight conveyance technology uses within the activity (Dick and Hollebrands 2011): encouraging collaboration around mathematical problems; sequencing and sharing work on mathematical tasks; orchestrating mathematical discourse; or monitoring and assessing mathematical learning.

Timeline
- March 1, 2022: Intent to submit a manuscript*
- May 1, 2022: Deadline to submit manuscript
- August 1, 2022: Authors notified about acceptance decisions
- September 1, 2022: Authors submit revised manuscripts
- September 15–October 15, 2022: Final manuscript revisions
- October 15, 2022: Final version of manuscripts due
- April/May 2023: Book released
## Example Chapter Proposal

<table>
<thead>
<tr>
<th>Relevant grade band</th>
<th>High school</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCSSM(s)</td>
<td>HSG.CO.D.12</td>
</tr>
<tr>
<td>Mathematical Action Technology</td>
<td>GeoGebra</td>
</tr>
<tr>
<td>Mathematics Teaching Practice(s)</td>
<td>Implement tasks that promote reasoning and problem solving</td>
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<tr>
<td>Primary use of mathematical action technology</td>
<td>Promoting Cycles of Proof: Creating, testing, revising, and proving mathematical conjectures</td>
</tr>
<tr>
<td>Use(s) of conveyance technology (optional)</td>
<td>Sequencing and sharing work on mathematical tasks Monitoring and assessing mathematical learning</td>
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</tbody>
</table>
| Mathematical objective(s) of the activity | 1. Construct an equilateral triangle based on knowledge of definitions and geometric properties (e.g., sides, angles, symmetry).  
2. Justify why a construction is an equilateral triangle based on knowledge of definitions and geometric properties (e.g., sides, angles, symmetry).  
| Brief description of the activity | Students construct, in as many ways as they can, equilateral triangles with varying degrees of restricted access to tools in GeoGebra (e.g., segment and circle tools only, segment and regular polygon tools, any/all tools available). For each construction, students justify, to the classroom community, that the object created is in fact an equilateral triangle using knowledge of definitions and geometric properties. As students experiment with more available tools, they must identify the similarities and differences between the current construction and previous constructions. |
| Describe how the use of technology supports equitable mathematics teaching through the development of positive mathematical identity and agency | Within this activity, GeoGebra is being used to promote Cycles of Proof as students create, test, and revise equilateral triangle constructions. Students are able to use the construction tools in GeoGebra independent of their mathematical background and experience. This provides them with freedom to experiment, explore, and select the methods that make the most sense. In doing so, the use of technology supports the development of each student’s positive mathematical identity by providing multiple pathways for success. Throughout the lesson, students have opportunities to develop their mathematical agency as they verbalize their reasoning, explain their personally created constructions, and persist in justifying why their approach results in an equilateral triangle. |
Suggested Supplemental Reading


Questions regarding this call for manuscripts should be directed to Craig Cullen at cjculle@ilstu.edu and Joshua Hertel at jhertel@uw lax.edu.