Loyola Marymount University
Center for Equity for English Learners

Viewing with a Purpose
Video guide based on Dr. Cathery Yeh's presentation titled:

Social Justice Mathematics: Critical Mathematics to Form Better Social Worlds

[View Session 1 Video Highlights]

Content

Introduction and Purpose

Welcome to the video viewing guide for *Social Justice Mathematics: Critical Mathematics to Form Better Social Worlds*, based on session one of a two-part series focused on Mathematics and Multilingual/English Learners featuring Dr. Cathery Yeh, a Faculty Affiliate at the Center for Equity for English Learners.

Dr. Yeh is an Assistant Professor in STEM Education at the University of Texas at Austin and a core faculty member in the Center for Asian American Studies. Her extensive experience as a dual language classroom teacher and her impactful research on race, class, gender, and language in mathematics education bring a unique and valuable perspective to this session. Her work emphasizes creating equitable learning environments that leverage diversity and promote justice.

In the *Social Justice Mathematics: Critical Mathematics to Form Better Social Worlds* presentation, Dr. Yeh engages educators in unpacking the concept and application of social justice mathematics through the following lenses:

About social justice - plan collective learning spaces to look at serious or provocative issues relevant to our communities using mathematics.
With social justice - design classroom interactions that attend to participation and status.
For social justice - promote practices founded on the belief that mathematics is a tool to be used to challenge the status quo.

This guide is designed to support teachers, administrators, educational leaders, and coaches in engaging deeply with the content, fostering personal reflection, and facilitating meaningful group discussions to inform, refine, and improve pedagogical practices for Multilingual/English Learners. It provides two parallel pathways for viewing and discussion within small or large group settings. A variety of guiding questions allow for personal and group learning.

Why this focus?

There is an urgent need to address, at a national level, the long-standing inequities in mathematics education that have disproportionately affected English Learners and historically marginalized populations of students. The Center for Equity for English Learners (CEEL) at Loyola Marymount University is committed to leading research, practice, and policy efforts to address these inequities and strategically partners with organizations and coalitions such as the High-Quality Instructional Materials Learning Partners (HQIM LP) to engage in collective efforts to transform educational practices and policies to better serve multilingual and English Learner students. Through our partnership with EdTrustWest, Californians Together and other key organizations, we are guiding and supporting the implementation of the groundbreaking **2023 California Mathematics Framework** (Math Framework), which provides a model for integrating English language development with mathematics instruction. This framework serves as an example of how to create equitable, rigorous educational experiences that meet the diverse needs of all students, setting a new standard for equity in mathematics education.

Recommendations for Facilitators and Group Leaders

To effectively engage in examining the connection between social justice and mathematics, the 2023 CA Mathematics Framework provides considerations and guidance. We offer recommendations for an approach to building a strong foundation in understanding and applying the intersection between social justice and mathematics, setting the stage for meaningful educational change. Note that we reference the Math Framework Summary as an initial steppingstone to developing a bird's eye view of the framework and the connection of social justice and mathematics. Nevertheless, a deeper dive into the various chapters is highly recommended.[1]

1. Familiarize Yourself with Key Concepts

- **Start with Chapter 1:** This chapter lays the foundation by explaining the purpose of mathematics education and its connection to social justice (pp.1-18). Focus on sections like "Mathematics as Launchpad or Gatekeeper: How to Ensure Equity" (pp.10-15) and "Teaching the Big Ideas" (pp. 15-18).

2. Understand the Framework for Equity and Engagement

- **Move to Chapter 2: Teaching for Equity and Engagement** (pp. 3-6): This chapter is crucial for understanding how to create an equitable and engaging math classroom. It offers specific strategies that teachers can start implementing right away.

3. Dive into Practical Applications

- **Explore Chapters 6, 7 and 8: Chapter 6** provides practical examples of how these key concepts can be applied starting in early math education. This an excellent starting point to see these ideas in action, especially for teachers working with younger students. Depending on your grade level focus, the exploration of **chapters 7 and 8** allow for a dive into the progression of these concepts through the various grade levels.

4. Plan for Professional Development

- **Delve into Chapter 10**: This chapter offers guidance on how to support teachers in learning and applying these concepts. It is a great resource for administrators and professional development coordinators looking to equip their teams with the necessary skills.

5. Review the Snapshots and Vignettes

- **Refer back to Snapshots and Vignettes mentioned in Chapter 1** (p. 4): These provide real-life examples of how the discussed strategies and concepts look in the classroom. They can serve as inspiration and concrete starting points for discussions and lesson planning. We also recommend Appendix C which provides more vignettes to illustrate the application of these key elements and concepts.

6. Engage in Discussions and Collaborative Planning

- **Use this video viewing guide to plan engaging team meetings**: Gather your team of educators and discuss the key points outlined in the guide. Collaboratively brainstorm how these ideas can be integrated into your curriculum and teaching practices.

1 California Department of Education, 2023. https://www.cde.ca.gov/ci/ma/cf/

Knowledge Building: Social Justice and Mathematics

For Facilitators and/or Participants

The aim of this section is to make the connection between mathematics education and social justice clear and actionable, providing educators with the necessary tools and references to engage meaningfully with the content. This guide also provides a Resources section that includes a wide range of resources to guide transformational professional learning. The California Mathematics Framework is presented as an example of leveraging guidance to transform pedagogical beliefs and practices. The National Council of Teachers of Mathematics' publication, *Catalyzing Change* series, guides and supports critical conversations amidst the success and challenges of the implementation of equitable teaching practices in diverse multilingual classrooms. See the References section for further information about this resource.

This section previews overarching themes, provides guiding concept descriptions, and specific Math Framework page reference to streamline knowledge-building and to facilitate the conversations. This information may be used primarily by facilitators in preparation for leading professional learning groups. However, based on the experiences of the learning community, it might be helpful for all participants to engage in a time of individual knowledge building around these topics. We recommend that participants engage in at least 20 minutes of independent exploration of this section, prior to the viewing of the video segments and discussion. We recommend establishing group norms and communication/discussion guidelines as this content might trigger strong feelings and opinions.

The following are key components of the **2023 CA Mathematics Framework** (Math Framework) to support knowledge building. The Math Framework chapters do not provide formal definitions for the following concepts, but rather describe them in terms of themes and guiding/key concepts within the framework. For instance, equity is discussed as a foundational principle for creating accessible and supportive mathematics learning environments, while Big Ideas are presented as central organizing concepts rather than explicitly defined terms. Culturally relevant pedagogy is discussed as part of equitable teaching practices, particularly emphasizing the importance of integrating students' cultural backgrounds into instruction.

Overarching Themes:

- **Equity in Mathematics**: Ensuring that all students have access to the resources, opportunities, and support they need to succeed in math.
- **Big Ideas in Mathematics**: Central themes or concepts that connect different areas of math and help students see the relevance of math to real-world issues.
- **Culturally Relevant Pedagogy**: An approach to teaching that uses students' cultural experiences as a foundation for learning.

Key Elements from the 2023 CA Mathematics Framework

Guiding Concepts

1. **Social Justice in Mathematics**
   - **Guiding Concept:** Social justice in mathematics involves ensuring that all students, regardless of cultural or linguistic background, have equitable access to high-quality math education. It emphasizes the role of mathematics in understanding and addressing societal inequalities.

     - **Chapter 1: Mathematics as Launchpad or Gatekeeper: How to Ensure Equity** - Discusses the dual role of mathematics as both a gateway to opportunity and a potential barrier if not taught equitably (pp. 10-15).
     - **Chapter 2: Teaching for Equity and Engagement** - Provides strategies for creating equitable and engaging classroom environments, focusing on social justice in teaching (pp. 3-12).

2. **Understanding the Big Ideas in Mathematics and Their Social Impact**
   - **Guiding Concept**: Big Ideas in mathematics are central concepts that connect various mathematical understandings and have broader implications for students' understanding of the world.
   - **Social Justice Connection**: By teaching these Big Ideas, educators can help students see the relevance of mathematics in addressing real-world issues, such as inequality, environmental justice, and public health.

     - **Chapter 1: Teaching the Big Ideas** - Outlines the importance of teaching connected concepts to foster deep understanding and how these can be linked to social justice themes (pp. 15-18).
     - **Chapter 6: Mathematics: Investigating and Connecting Transitional Kindergarten through Grade Five** - Discusses how early math education can be framed around Big Ideas that promote equitable understanding (Math Framework Summary, p.5. See Chapter 6, 7 & 8 for the full progression).

3. **Teaching for Social Justice in Mathematics**
   - **Guiding Concept**: Teaching for social justice in mathematics involves using instructional strategies that highlight and address social inequalities through math education.
   - **Strategies**: Incorporating open tasks that allow for multiple entry points, using culturally relevant examples, and inviting students to ask critical questions are key strategies.
     - **Chapter 2: Teaching for Social Justice** - Focuses on specific instructional strategies to integrate social justice into math teaching (pp. 3-6).
     - **Chapter 9: Structuring School Experiences for Equity and Engagement** - Discusses broader structural approaches to ensure all students have access to rigorous math education (Math Framework Summary, p.6. See Chapter 9 for the full discussion and guidance).

4. The Role of Mathematics in Civic Life

- **Guiding Concept**: Mathematics plays a crucial role in civic life by equipping students with the tools to understand and address societal issues, such as voting, public policy, and economic inequality.
- **Social Justice Connection**: Educators can use math lessons to empower students to participate fully in society and advocate for social change.

    - **Chapter 1: Why Learn Mathematics?** - Explores how mathematical understanding is essential for informed citizenship and social justice (pp. 5-7).
    - **Chapter 12: Mathematics Assessment in the 21st Century** - Discusses how assessment practices can be aligned with goals of equity and civic engagement (Math Framework Summary, p.7. See Chapter 12 for the full discussion on assessment and formative assessment for diverse students).

5. Supporting Diverse Learners in Mathematics

- **Guiding Concept**: Effective math instruction recognizes and leverages the diverse cultural, linguistic, and experiential backgrounds of students to enhance learning.
- **Social Justice Connection**: By supporting diverse learners, educators can help close achievement gaps and promote equity in mathematics education.

    - **Chapter 1: What We Know About How Students Learn Mathematics** - Highlights research on learning diversity and its implications for equitable instruction (pp. 7-10).
    - **Chapter 10: Supporting Educators in Offering Equitable and Engaging Mathematics Instruction** - Provides guidance for professional learning that equips teachers to support diverse learners (Math Framework Summary, p.6. See Chapter 10 for full guidance).

For teachers who need further knowledge building or clarification on definitions and teaching strategies, consider providing them with:

- **Snapshots and Vignettes**: Referenced throughout the Math Framework, these provide practical examples of how the framework's approaches can be applied in the classroom (Chapter 1, p.4, and Appendix C: Vignettes).
- **Professional Learning Resources**: Chapter 10 of the Math Framework provides extensive resources for ongoing teacher development, crucial for those unfamiliar with these concepts.

Note-Taking Guide for Video Segments

Identify quotes, facts, key ideas that caught your attention.	*Describe your personal response, thoughts and feelings or questions.*

Personal Reflection

We recommend that, if possible, facilitators and participants view the videos individually and use the note-taking guide to engage with the content by answering the following suggested personal reflection questions before engaging in discussion. These questions may also be used during small and large group discussions as proposed in the two scenarios of the Professional Learning Facilitation Guide section below, to deepen discussions based on the guiding questions.

These questions aim to encourage thoughtful reflection to strengthen and further discussions on how mathematics can intersect with social justice in meaningful ways. Note that the questions are centered around the themes discussed in each video segment. Questions 1-6 encourage honest reflection with one's believes, thoughts and mindsets as educators. Questions 7-10 encourage classroom and instruction connections and application of the topics being discussed, bridging one's views and perspectives to the linguistic, cultural and academic diversity of student's experiences and backgrounds.

1. **Connecting Social Injustice and Mathematics:**
    - Dr. Cathery Yeh mentions that mathematics is rarely associated with social injustice. How can we bridge this gap and integrate discussions about social justice into our math curriculum?

2. **Ethos of Ethnic Studies and Mathematics:**
    - How can we use students' lived experiences and cultural backgrounds to enhance their understanding of mathematical concepts? What are some practical strategies for incorporating these experiences into lessons?

3. **Personal Connection Through Graphs:**
    - What impact might it have on students to represent their personal stories or experiences through graphs? How can this approach make math more meaningful and relatable for them?

4. **Mathematics as a Process:**
    - How does the idea of mathematics as a process, rather than just a set of procedures or facts, affect students' attitudes and confidence in math? How can we foster a process-oriented approach in our teaching?

5. **Mathematics for Understanding [Hi]stories:**
    - In what ways can we use mathematical tools to gain insights into historical and contemporary social issues? Can you provide examples of how math can be applied to better understand real-world events?

6. **Math for Movement Building:**
    - How can mathematics be utilized to analyze and support social movements or community actions? What are some examples of using math to understand and advocate for social change?

7. **About Social Justice:**

    A. **Integrating Standards and Community Knowledge:**
        a. How can educators effectively balance formal standards with the informal, community-based knowledge students bring to the classroom?
        b. What are some ways to integrate students' existing knowledge into math lessons while still meeting curriculum standards?
    B. **Critical Sociopolitical Knowledge:**
        a. How can mathematical instruction be designed to help students critically analyze and understand social inequities?
        b. What role does sociopolitical knowledge play in developing students' ability to use math to critique societal issues?
    C. **Bridging Knowledge Gaps:**
        a. How can we ensure that students' informal and community knowledge is valued and incorporated into their learning experiences?
        b. What are some strategies for making connections between students' lived experiences and formal mathematical content?

8. **With Social Justice:**

    A. **Engaging Students in Problem Solving:**
        a. How can problem-solving tasks be designed to address and engage with social justice issues?
        b. What types of purposeful questions can help connect mathematical problems to students' real-world experiences and social concerns?
    B. **Mathematical Representations:**
        a. How can mathematical representations be used to illustrate and explore social justice issues?
        b. In what ways can connecting problems to social justice topics enhance students' mathematical thinking and problem-solving skills?
    C. **Eliciting Student Thinking:**
        a. How can educators elicit and value students' diverse perspectives when exploring social justice through math?
        b. What are effective methods for encouraging students to think critically and creatively about social justice issues in mathematics?

9. **For Social Justice:**

    A. **Exploration and Collaboration:**
        a. How can collaborative exploration in math support students in developing a deeper understanding of social justice issues?
        b. What are some ways to facilitate student-led exploration of social justice topics through math?

B. **Relevance and Action:**
    a. How can educators ask questions that are relevant to students' lives and encourage them to consider action items based on their mathematical explorations?
    b. What are some examples of how students can use their mathematical learning to address real-world social issues?
C. **Building with Students:**
    a. How can teachers support students in building their own understanding and solutions related to social justice?
    b. What strategies can help students connect their mathematical insights with practical actions for social change?

10. Creating Justice-Centered Lessons:

A. **Curiosity and Data:**
    a. How can following curiosity and data help in creating justice-centered math lessons?
    b. What are some examples of how curiosity about social issues can lead to meaningful mathematical inquiries?
B. **Connecting Math with Social Issues:**
    a. How can educators use current events and historical contexts to make math lessons more justice-centered?
    b. What are some effective methods for integrating real-world data and social issues into math instruction?
C. **Role of Numbers and Data:**
    a. How can numbers and data be utilized to explore and understand social justice topics?
    b. In what ways can the exploration of data lead to a deeper understanding of social justice issues and inform action?

Professional Learning Facilitation Guide

The following scenarios provide a structure for professional learning leaders to engage a small or large group of educators in the exploration of their own beliefs and understandings, and to bring questions and new learnings to a professional community aiming to grow together in bringing social justice mathematics to their classrooms.

We recommend that prior to engaging in group discussions, you create community norms and communication/discussion guidelines.

This approach ensures that participants engage deeply with the content and come away with practical strategies for integrating social justice into their mathematics instruction.

Scenario A: (50-60 minutes)

1. **Introduction (5 minutes):**
    - Briefly introduce the themes of the video and the importance of integrating social justice into mathematics.
    - Discuss the relevance of social justice in mathematics education and outline the goals for the session.

2. **Segment Review and Discussion (25 minutes):**
    - Show selected video segments, allowing a few minutes of reflection between segments if needed.
    - After each segment, use guiding questions to facilitate small group discussions. Aim for 5-7 minutes of discussion per segment.

3. **Group Reflection (10 minutes):**
    - Using the questions provided in the Personal Reflection section, lead a whole-group discussion. Encourage participants to share their thoughts and experiences.

4. **Interactive Action Planning (10-15 minutes):**
    - Break into smaller groups to brainstorm practical strategies or lesson ideas based on the discussion.
    - Share highlights from the brainstorming session and discuss next steps for implementation.

Professional Learning Facilitation Guide
(Continued)

Scenario B: (1.5 -2.5 hrs.)

1. **Introduction (5-10minutes):**
    - Begin with a brief introduction to the themes of the video and the importance of integrating social justice into mathematics.
    - Emphasize the relevance of social justice in mathematics education and outline the goals for the session.

2. **Segment Review (20-30 minutes):**
    - Watch the selected segments of the video.
    - After viewing each segment, discuss the guiding questions in small groups. Encourage participants to relate the content to their own teaching practices and experiences,

3. **Facilitated Discussion (30-40 minutes):**
    - Based on your group specific needs, use the guiding questions to lead a whole-group OR small group discussion. Encourage participants to share their thoughts and experiences related to each question.

4. **Interactive Reflection (20-30 minutes):**
    - Break into smaller groups to brainstorm lesson ideas or strategies based on the discussion. Each group can focus on different aspects of integrating social justice into math instruction.
    - Reconvene and share insights from each group.

5. **Action Planning (15-20 minutes):**
    - Bring the group back together to share highlights from the brainstorming session. Discuss next steps and how participants can implement their ideas in their teaching practice.
    - Focus on key takeaways and practical applications for the classroom.
    - Develop a list of actionable strategies or lesson ideas to incorporate social justice into mathematics instruction.

Guiding Questions for Discussion

For Facilitators

Recommendations:

- Individually, view all segments. As you view the video segment(s), we recommend you use the Note Taking Guide to record any thoughts, feelings, or questions that arise.
- Establish group norms and communication/discussion guidelines. Refer to the sample norms.
- Begin your focused discussions with Video Segment #1. It provides a foundational overview to support discussion around other segments.
- Select 2-3 video segments to engage in group discussions, adjusting to the time you have available for your professional learning.

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1. Dr. Cathery Yeh: An Advocate for Equity and Social Justice in Mathematics (1m 41s)

Guiding Questions:

Connecting Social Justice and Mathematics:

- Why might mathematics be overlooked in discussions about social justice?
- What are some examples of how mathematics has been used to address social justice issues?
- How can we integrate discussions about social justice into our math curriculum?

Recommendations:

- Encourage participants to reflect on the connection between mathematics and social justice in their own experiences.
- Discuss ways to incorporate social justice themes into mathematics instruction to make it more relevant and impactful.

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2. Ethos of Ethnic Studies: Interconnectedness (3m 35s)

Guiding Questions:

- How does building on students' mathematical knowledge and lived experiences enhance their learning?
- In what ways can educators integrate students' cultural and personal backgrounds into math instruction?
- How does understanding the interconnectedness of math and identity affect student engagement?

Recommendations:

- Share examples of instructional practices that connect mathematics with students' experiences and cultural backgrounds.
- Explore strategies to create a more inclusive mathematics curriculum that reflects diverse perspectives.

3. Your Life Story Through a Graph (3m 36s)

Guiding Questions:

- How might graphing personal life stories deepen students' understanding of both mathematics and their own identities?
- What insights can be gained from visualizing personal experiences through data?
- How can this approach be used to make mathematical concepts more relatable and meaningful?

Recommendations:

- Encourage participants to create and analyze their own graphs representing personal or community stories.
- Discuss the potential impact of using personal data in mathematics lessons on student engagement and learning.

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4. Mathematics as a Process, Rather Than a Noun (1m 57s)

Guiding Questions:

- How does viewing mathematics as a process rather than a fixed set of skills change the way we teach it?
- How can we shift from a focus on rote learning to a process-oriented approach in math education?

Recommendations:

- Share strategies for fostering a process-oriented approach in math instruction.
- Discuss the potential benefits of avoiding early tracking and promoting a growth mindset in mathematics.

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5. Using Math to Better Understand [Hi]stories (13m 51s)

Guiding Questions:

- How can mathematics be used to analyze and understand historical and contemporary social issues?
- What are some examples of mathematical tools or methods that can provide insights into social and historical contexts?
- How does this approach change our perception of the role of math in understanding the world?

Recommendations:

- Explore case studies where mathematics has been used to analyze historical or social issues.
- Discuss ways to incorporate historical analysis and social context into math lessons.

6. Tu Lucha, es Mi Lucha: Mathematics for Mo[ve]ment Building (5m 33s)

Guiding Questions:

- In what ways can mathematics contribute to analyzing and understanding social movements?
- How can mathematical analysis support efforts to address social and political issues?
- What role does mathematics play in documenting and advocating for social justice causes?

Recommendations:

- Share examples of how mathematical analysis has been used in social movement research and advocacy.
- Discuss how students can use math to explore and support social justice initiatives.

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7. Guiding Framework: About Social Justice (7m 52s)

Guiding Questions:

- What is the importance of integrating community knowledge and critical sociopolitical knowledge into math education?
- How can educators balance formal standards with the informal knowledge that students bring to the classroom?
- How does incorporating critical knowledge into math instruction help address inequities?

Recommendations:

- Explore ways to integrate community and critical knowledge into math lessons.
- Discuss methods for balancing formal educational standards with students' lived experiences and perspectives.

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8. Guiding Framework: With Social Justice (3m 59s)

Guiding Questions:

- What types of questions and problems are most effective in engaging students with social justice themes and issues?
- How can mathematical representations and student thinking be connected to real-world social issues?

Recommendations:

- Share examples of problem-solving tasks that integrate social justice themes.
- Discuss how to design questions and problems that encourage critical thinking about social issues.

9. Guiding Framework: For Social Justice (2m 41s)

Guiding Questions:

- How can collaborative exploration in math support students' understanding of social justice?
- What are some ways to involve students in identifying and addressing social issues through math?
- How can educators create opportunities for students to develop actionable solutions to real-world problems?

Recommendations:

- Discuss strategies for involving students in collaborative and exploratory math projects related to social justice.
- Share methods for guiding students in developing and implementing action plans based on their mathematical explorations.

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10. Creating Justice-Centered Lessons (1m 20s)

Guiding Questions:

- How can curiosity and data be used to develop justice-centered math lessons?
- What are some ways to connect mathematics with current social and historical contexts?
- How can educators encourage students to see the relevance of math in understanding and addressing social issues?
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Recommendations:

- Explore examples of justice-centered math lessons that use data and current events.
- Discuss ways to foster curiosity and relevance in math instruction through real-world connections.

Norms for Group Discussion

Creating group norms that foster a respectful, open, and inclusive environment is essential when discussing potentially sensitive or triggering topics like equity and social justice in mathematics. These norms can help create a foundation of respect, empathy, and openness that will enable participants to engage deeply and thoughtfully with complex topics.

Here are some suggested norms that could support and facilitate these discussions:

1. **Assume Good Intentions**

- Encourage participants to engage in conversations with empathy, understanding that everyone is here to learn and grow.
- Remind the group to assume that each person's comments are coming from a place of goodwill, even if they may express ideas differently.

2. **Listen actively and respectfully**

- Cultivate a supportive environment by focusing on fully understanding each other's perspectives.
- Listen to understand, not to respond. Allow each person to finish their thoughts without interruption and reflect on what's being said before replying.

3. **Speak from personal experience and avoid blame**

- Encourage authenticity and reduce generalizations by having participants share their own experiences.
- Use "I" statements to share personal perspectives rather than making assumptions about others' experiences or beliefs.

4. **Embrace discomfort and Lean into Learning**

- Acknowledge that growth often involves discomfort and that these discussions are part of a learning journey.
- Normalize the idea that it's okay to feel uncomfortable. Encourage participants to sit with that discomfort as they explore complex topics.

5. **Keep information and events confidential**

- Build trust by ensuring participants feel safe sharing personal stories or perspectives.
- Agree that what's shared in the discussion remains within the group, fostering an environment where participants feel secure to be open and honest.

6. **Be accountable for your words and their impact**

- Foster accountability by encouraging participants to be mindful of how their words may affect others.
- Acknowledge that good intentions may still lead to unintended harm. Encourage participants to be open to feedback and to apologize if they unintentionally offend.

7. **Disagree in a constructive way**

- Promote healthy dialogue by encouraging respectful differences of opinion.
- Disagreement is welcome as long as it's respectful. Focus on ideas rather than personal criticisms and aim to learn from contrasting viewpoints.

8. **Be open to understand new ideas and perspectives**

- Encourage an open-minded approach, fostering learning and empathy.
- Remind participants that they are here to learn and may encounter perspectives different from their own. Encourage them to consider these new viewpoints as valuable learning opportunities.

9. **Be mindful of yourself and your emotions**

- Encourage participants to be mindful of their own well-being.
- Recognize that discussions around equity and social justice can be emotional or triggering. Encourage participants to take a break if needed and return when they feel ready.

Resources to continue advancing Equity, Social Justice and Mathematics

Helpful California Mathematics Framework Chapter References

For teachers who need further clarification on definitions and teaching strategies, consider providing them with:

- **Snapshots and Vignettes**: Referenced throughout the Math Framework, these provide practical examples of how the framework's approaches can be applied in the classroom (Chapter 1, p.4, and Appendix C: Vignettes).
- **Professional Learning Resources**: Chapter 10 of the Math Framework provides extensive resources for ongoing teacher development, crucial for those unfamiliar with these concepts.

Other Resources

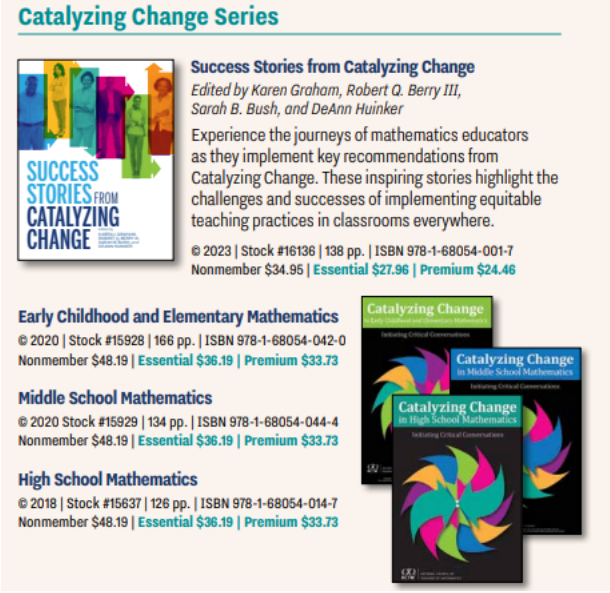
Websites

- **National Council of Teachers of Mathematics (NCTM)**
- **Mathematics Framework and Equity for English Learners - Loyola Marymount University (lmu.edu)**
- **California High-Quality Instructional Materials Learning Community: Resource Page – (EdTrust-West)**
- **OELA | U.S. Department of Education (Reports, Toolkits, and Resources for ELs)**
- **Learning for Justice**

Publications, Podcasts, and Videos

- **NCTM Statement of Beliefs**
- **Mathematics Education in the United States 2020**
- **Integrating Language While Teaching Mathematics (December 2019) | NCELA - English Language Acquisition & Language Instruction Educational Programs**
- **Instructional Practices Guide – Mathematical Association of America**
- **Free Resources | The Math Learning Center**
- **Mathematics Framework - Mathematics (CA Dept of Education)**
- **Math Equity Toolkit - Loyola Marymount University (EdTrust-West)**
- **Annotated Bibliography - Loyola Marymount University (lmu.edu)**
- **Equity Resources - Loyola Marymount University (lmu.edu)**

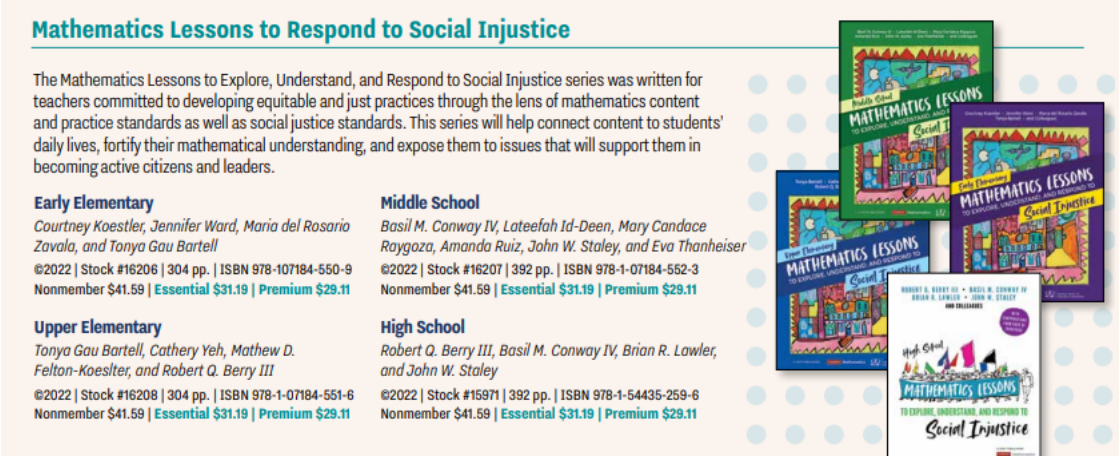
Recommended literature to explore social justice and equity centered mathematics lessons



Huinker, D., Yeh, C., & Marshall, A. M. (2020). Catalyzing change in early childhood and elementary mathematics: Initiating critical conversations.

Bush, S. B., Roy, G. J., & Jackson, C. (2020). Catalyzing Change in Middle School Mathematics: Initiating Critical Conversations.

Graham, K., Burrill, G., & Curtis, J. (2018). Catalyzing change in high school mathematics: Initiating critical conversations.



Bartell, T. G., Yeh, C., Felton-Koestler, M. D., & Berry III, R. Q. (2022). *Upper elementary mathematics lessons to explore, understand, and respond to social injustice*. Corwin Press.

Berry, R. Q., Conway, B. M., Lawler, B. R., & Staley, J. W. (2020). Lessons to explore, understand, and respond to social injustice. *Mathematics Teacher: Learning and Teaching PK-12*, *113*(9), e34-e36.

Berry III, R. Q., Conway IV, B. M., Lawler, B. R., & Staley, J. W. (2020). *High school mathematics lessons to explore, understand, and respond to social injustice*. Corwin Press.

Conway IV, B. M., Id-Deen, L., Raygoza, M. C., Ruiz, A., Staley, J. W., & Thanheiser, E. (2022). *Middle school mathematics lessons to explore, understand, and respond to social injustice*. Corwin Press.

Koestler, C., Ward, J., del Rosario Zavala, M., & Bartell, T. G. (2022). *Early elementary mathematics lessons to explore, understand, and respond to social injustice*. Corwin Press.