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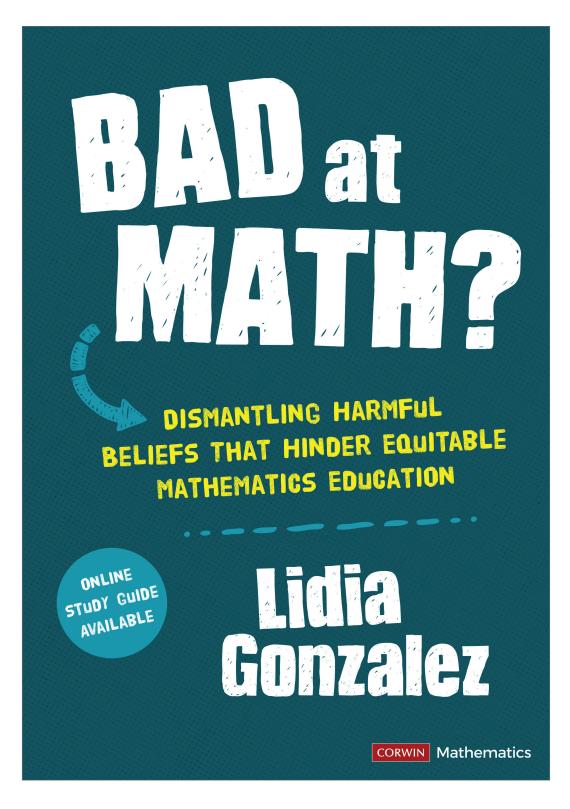
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Please enjoy this complimentary excerpt from Bad at Math?.

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BAD AT MATH?

DISMANTLING HARMFUL BELIEFS
THAT HINDER EQUITABLE
MATHEMATICS EDUCATION

BOOK STUDY GUIDE

Note to Facilitators

Welcome to the book study guide for *Bad at Math? Dismantling Harmful Beliefs That Hinder Equitable Mathematics Education*. Every book study group or professional learning community is different and unique. If you are formally facilitating a book study group, this is meant to serve you as a guide, but you should feel free to make it your own and tailor it to the group you are facilitating. Here are some helpful tips and reminders:

Goals

Book studies are opportunities for educators to explore a professional book with peers, discuss and reflect on key takeaways, and apply that learning to their professional practice. Any book study can be worthwhile as long as you and your other participants set out clear goals and success criteria, and as long as all participants are dedicated to achieving these goals. If one of your goals is to implement the strategies in the book and evaluate them for success, be sure to define as a group what you want that success to look like (i.e., did the implementation achieve the desired outcome?).

Length and timing

This depends on the length of the book, how deep you want to go into each topic, and the availability of your participants. The following guide is not meant to be prescriptive, and you may not cover all of it, but you can adapt it to the needs of your group.

This guide offers suggestions for breaking the reading up across multiple days. If participants don't have the time to read independently before coming to the meetings, you can break up the reading into groups instead and engage in a jigsaw activity. A jigsaw is a cooperative learning strategy that enables each participant of a "home" group to specialize in one aspect of a topic or one section of reading, which they engage in with an "expert" group. They then return to their home group and share what they've learned. Here are instructions for facilitating a jigsaw. If your group engages in this format, be sure to determine whether participants have a shared understanding of the content before moving to the "Into the Classroom" sections.

Format

Many groups prefer to meet face-to-face, but it's important to consider all participants' availability and accessibility. Book studies can be equally successful online via video conference, in an online forum, or on social media.

This book study guide offers three types of interaction:

- "During Reading" questions and reflections
- "As a Group" discussion questions
- "Into the Classroom" activities

You can do or assign those that make sense to you and that fit within your time budget. If you are engaging in a jigsaw format, you may choose to have participants focus on the "During Reading" questions together. The "Into the Classroom" sections ask participants to try something in the classroom. Be sure to spend time agreeing on what criteria will determine

whether use of a particular intervention or strategy had the impact that was expected. Also leave some time at the beginning of the next meeting, or set a separate interim time, to debrief and analyze the results of the inquiry (i.e., prompt participants to describe what happened, form hypotheses, and determine next steps).

Setting norms

In order to establish a safe, trusting, respectful, and committed environment for discussing a book in a professional setting, it's critical to work with your group to co-create and agree to certain norms. Norms provide a clear pathway, helping to ensure all voices are heard and respected and no voice dominates the discussion. They ensure all members of the group can engage in a productive and meaningful experience from which they can learn and grow. Here are some guidelines and processes for setting norms:

- Brock, L. (2020, October 7). Using a book club to navigate challenging topics. Edutopia. https://www.edutopia.org/article/using-book-club-navigate-challenging-topics
- Learning Forward. (2013). Tool: Creating norms. https://learningforward.org/lf-newsletter/ summer-2013-vol-8-no-4-4/tool-creating-norms/

Be sure to leave ample time during the first session, or have a separate launch session, to focus on co-creating norms.

Facilitate like a pro

Some participants will share their thoughts and opinions readily, while others may feel more hesitant and let their more outgoing colleagues guide the discussion. It's important to engage your quieter participants—without putting them on the spot—and keep the conversation moving smoothly without letting any one person dominate the discussion. Try allowing your participants to discuss with a partner or a small group, or let everyone have a moment to share.

Support

Lack of support—or even any appearance of it—can quickly derail any forward progress. Make it clear from the start that your participants will be supported by their administration as they try out their new learning in the classroom. Plus make it a point to follow up regularly to see how they've applied their learning and share what participants are doing successfully.

Note to Participants

Welcome to the book study guide for *Bad at Math? Dismantling Harmful Beliefs That Hinder Equitable Mathematics Education*. The book aims to explore commonly held beliefs about mathematics and mathematics education that drive the ways we approach mathematics education, narrow the ways we engage with mathematics, and impact efforts at reform. These beliefs include the following:

- 1. Mathematics is all about numbers and equations.
- 2. Mathematics is about getting to the one correct—the *only* correct—answer.
- 3. Someone who does mathematics is smart, and part of what it means to be smart is to be able to do computations quickly in one's head without the need for aids or research.
- 4. There exist a small number of math people for whom mathematics comes naturally.
- 5. The educational system is somehow irreparably broken.
- 6. There exist achievement gaps in mathematics.
- 7. It is not important to attend to identity when teaching mathematics.
- **8.** Mathematics is neutral and its teaching apolitical.

By raising, examining, and questioning these beliefs, we hope to step outside the usual discourses and undertake authentic and substantive efforts to improve the teaching and learning of mathematics. The book contains ideas for small changes that educators can implement in their classrooms, buildings, systems, and beyond to chip away at these commonly held, harmful beliefs as well as recommendations and resources for further learning. This book study guide aims to engage you in the work of challenging these beliefs while making space for reflection, highlighting opportunities to share and work with others, and supporting the implementation of various strategies found throughout the book.

We know professional development is important to teachers, but we also recognize that there are a lot of demands on your time. We have deliberately designed this book study guide to be collaborative so that you learn with and from your colleagues. Each book study participant comes to the group ready to share in-class strategies and activities. That way everyone gets the benefit of all of the ideas *Bad at Math*? has to offer, without having to personally practice every strategy.

By the end of the book study, as a group you will have had opportunity to do any or all of the following:

- Discuss ways to push back against commonly held yet harmful beliefs around mathematics and mathematics education.
- Identify open-ended and open-middle problems you can use with your classes.
- Develop a better understanding of your own math identity and implicit biases, including how these impact your teaching.
- Discuss how you can learn about your students' identities and craft mathematics around these.
- Help students identify the mathematics all around them.
- Create an experience or event that brings mathematically able people into your classroom/school to share their experiences with students.
- Consider ways to support the idea that we are all math people.

- Learn about and incorporate effective praise into your teaching.
- Build upon and strengthen your use of nontraditional teaching practices including active learning, building upon students' experiences, and incorporating history in your teaching.
- Consider the non-neutral aspect of mathematics education.
- Incorporate a *math for social justice* lesson into your teaching.
- Reflect on teacher professionalism and the ways you can engage with the teaching profession beyond your classroom teaching.
- Strengthen the bonds you have with the teachers you work with throughout this book study.

The book study guide is arranged by chapters. We acknowledge that some of the chapters are very full and that the discussions and activities if completed as written might be beyond that which can be accomplished in one session depending on the length of the session. Please be flexible with the content. You may choose to devote two sessions to a particular chapter or to pick and choose among those activities and discussions that you might want to focus on if you want to complete these in one session. Take the time to make the book study your own.

We've even created an "Into the Classroom" Activity Recording Chart (see the recording sheet at the end of this guide) so that you have a record of the activities/strategies that you and your colleagues have tried over the course of the book study with notes about what you did, what worked, and what you would change.

Thank you for selecting *Bad at Math? Dismantling Harmful Beliefs That Hinder Equitable Mathematics Education* for your book study. And thank you for the challenging yet joyful work you do every day to teach mathematics and more to your students.

INTRODUCTION



1.	statement sit with you? What did you reply? What, if anything, would you change about your reply?
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2.	Review the eight beliefs listed in the introduction. Choose one that resonates with you as something we must challenge. Think about how, if at all, you already work to challenge this belief with your students. Are there any beliefs you do not yet work to challenge but would like to challenge more intentionally?

	After reading the introduction, jot down three things you hope to get out of the book and/or the book study.
E	As a Group
1.	Share your responses to "During Reading" question 1. How have your group members respond when others say that they are <i>bad at math</i> ?
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2.	Together craft a response that you can use when someone claims they are bad at math. Practic your response through role-play.
2.	Together craft a response that you can use when someone claims they are bad at math. Practic your response through role-play.

3.	Share and discuss your answers to "During Reading" question 2. What strategies do you already employ to challenge some of these beliefs? Which of these beliefs are you most interested in learning about?
4.	Reflect on the following quote: "Attempting to fix inner city schools without fixing the city in which they are embedded is like trying to clean the air on one side of a screen door" (Anyon, 1997, p. 168). In what ways does this quote resonate with you, if at all? What do you think it means in practice?
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CHAPTER 1: What Does It Mean to Be Good at Math?



Synopsis

- Discusses and challenges existing beliefs about what it means to be good at math
- Explores the role of open-ended problems in math education
- Considers the role of productive struggle and growth mindset
- Explores the research on the role of brilliance in mathematics
- · Reflects on how you can challenge traditional views of what it means to be good at math



Reading Timeline (here's how you might divide the reading into manageable segments)

- **Day 1:** Read from the beginning of the chapter to the heading *Does Mathematics Require Brilliance?*
- **Day 2:** Read from *Does Mathematics Require Brilliance*? to the heading *Using Rich Problem-Solving Tasks*.
- Day 3: Read from Using Rich Problem-Solving Tasks to the end of the chapter.



1.	Reflect on your experiences as a student. What messages did you receive about what it means to be good at mathematics? What messages do you want your students to receive?

2.	Reflect on the sentence, "Struggle in mathematics is to be expected, and those who are successful are not those who do not encounter such struggle, but those who are able to persist despite it." Note what you are currently doing in your classroom to help your students persist through struggle.
3.	Think about a closed problem you are planning to use in your classes in the coming week. Write it here.
	After reading the chapter, take Harvard's Project Implicit online assessment to identify attitudes, beliefs, and implicit biases around race, gender, and other areas.
	 Project Implicit. (2011). Preliminary information: Implicit Association Test (IAT). https://implicit.harvard.edu/implicit/takeatest.html
۷h	at did you learn from the assessment about your own implicit biases?
Wh	at did you learn from the assessment about your own implicit biases?

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<u> </u>	
上	As a Group
1.	Share with your group a closed problem that you plan to use in class in the coming days. Together rewrite these problems as open problems.
2.	Take a moment to write your thoughts about what it means to be good at mathematics. How do you determine if a student is good at math, and how do you support those who may be struggling? Share your answers with each other.
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3.	Review Figure 1.4: Shifting to Beliefs That Emphasize Students' Strengths. In what ways can you shift your underlying beliefs to emphasize student strengths?
4.	Select two questions from the reflection questions at the end of the chapter to discuss as a group.



Into the Classroom (after group meeting)

1.	Take a closed problem from "As a Group" question 1 that your group rewrote and implement it in your classroom. Reflect on how the students worked on the problem as compared to when you used it as a closed problem. What benefits did you find? What struggles did you and your students face?
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2.	With students, discuss what it means to be good at something. Have them develop a list of characteristics about how one becomes good at something.

3.	Prepare to share your findings with your team or book study group in the next group meeting.

CHAPTER 2: Beyond Numbers and Equations:What Is Mathematics?



Synopsis:

- · Considers what mathematics means and how it is used
- Explores research around student views of mathematics
- Illuminates important but underrepresented areas of mathematics
- · Highlights how you can challenge traditional views of what mathematics is



Reading Timeline (here's how you might divide the reading into manageable segments)

- **Day 1:** Read from the beginning of the chapter to the heading *The Focus of K–12 Mathematics* and *What Gets Left Out*.
- **Day 2:** Read from *The Focus of K–12 Mathematics and What Gets Left Out* to the heading *Balancing Algebra and Other Areas of Math.*
- Day 3: Read from Balancing Algebra and Other Areas of Math to the end of the chapter.



1.	Reflect on how you use mathematics in your everyday life outside of your role as a teacher. List three such ways.

۷.	routinely left out? How might you incorporate some of these in your classes?
3.	Think about what mathematics means to you.
	Into the Classroom (before group meeting)
1.	Have your students complete the following prompts (this can be in writing or, for younger children, aloud). Collect their answers and bring them to the group meeting.
	a. The best thing about math is
	b. The worst thing about math is

c. Learning math is like . . .



1.	Share your experiences with Chapter 1's "Into the Classroom" activities. What went well? What did you struggle with? How might you modify what you did going forward?
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2.	Share your students' responses to the prompts in this chapter's "Into the Classroom" activity 1. What surprised you about their answers? Brainstorm as a group how you can use what you learned from them going forward. Strategize as a group on next steps in this conversation with students. Note your next steps here.

3.	Identify ways you can bring diverse areas of mathematics into your teaching. Note one activity or problem you can use that highlights an area not typically covered in depth in K–12 schooling such as financial mathematics or discrete mathematics.
4.	Select two questions from the reflection questions at the end of the chapter to discuss as a group.
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1.	Incorporate a problem or activity you identified in "As a Group" question 2 into your class this week. Reflect on how it went. Do you think students saw it as mathematics? Did it seem novel or exciting and different to them? Did they struggle with it or not see value in it?
2.	Ask students to share with you what mathematics is to them. As a class, create a word map or a collage using images they find in magazines or draw themselves. Push them to include a wide array of areas and images. Hang this in your classroom.
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CHAPTER 3: Mathematicians and Mathematicians in Training



Synopsis:

- Discusses and challenges traditional beliefs about who mathematicians are
- · Considers representations of mathematicians in the media
- Examines degree attainment in mathematics among underrepresented groups
- Highlights how you can challenge traditional beliefs about mathematicians and support those typically marginalized in mathematics



Reading Timeline (here's how you might divide the reading into manageable segments)

- **Day 1:** Read from the beginning of the chapter to the heading *Working to Shift Students' Views.*
- Day 2: Read from Working to Shift Students' Views to the heading The Harmful Effects of Marginalizing Certain Groups.
- **Day 3:** Read from *The Harmful Effects of Marginalizing Certain Groups* to the end of the chapter.



1.	Think about the representations of mathematicians and mathematically able people in your classroom and in the textbooks you use. How are these individuals portrayed?

	Consider whether/how you view yourself as a mathematician. How does the label feel? In what w does it fit? In what ways does it feel uncomfortable?
=	As a Group
(As a Group
•	Share your experiences with Chapter 2's "Into the Classroom" activities. What went well? What of you struggle with? How might you modify what you did going forward?
•	Discuss with your colleagues ways to bring mathematically able people into your classrooms to share their experiences. Design with them an experience/event for your students (or the broader school community) where you invite community members to share their experiences with your classes.

3.	Discuss the data around underrepresented groups in mathematics. What was surprising? What was expected? In what ways can you support underrepresented groups in your school and broader community?
4.	Select two questions from the reflection questions at the end of the chapter to discuss as a group.



1.	Choose a mathematician from a diverse background whose story you will share with your class. You can do this by reading one of the picture books listed, viewing a film, or incorporating the story in some other way. Ask your students to reflect on the story and share their thoughts about the mathematician. Reflect on how the experience went.
2.	Carry out the experience from "As a Group" question 2 with your colleagues. How did it go? What did your students learn from the mathematically able individual? How can the experience be improved going forward?

CHAPTER 4: We Are All Math People



Synopsis:

- Redefines what is meant by the phrase math people
- Considers the many ways that humans are seekers of patterns
- Explores research on babies' recognitions of mathematical patterns
- Considers the role of context in students' learning of mathematics
- Highlights how you can challenge traditional beliefs about math people



Reading Timeline (here's how you might divide the reading into manageable segments)

- **Day 1:** Read from the beginning of the chapter to the heading *Nature Is the Best Mathematician*.
- Day 2: Read from Nature Is the Best Mathematician to the end of the chapter.



1.	Heflect on the quote, "As we have reconsidered what mathematics is and defined it as the study of patterns, it can be argued that we are all <i>math people</i> . Humans, after all, are inherently seekers of patterns." How do you see yourself as a seeker of patterns? How do you see your students as seekers of patterns?

2. Hov	would you define math people? What can you say to someone who professes to not be a math person?
A	to the Classroom (before group meeting)
	tto the Classicolli (before group meeting)
	re some of the mathematics in your life with your students. Then send students on a hunt to find the hematics all around them.
•	Have students tell, write, or draw about the mathematical experiences in their everyday lives.
•	Young children can search for shapes while on a walk around the community or the school.
•	Older students can bring in examples of math in the news and/or in their community.
expect t	the activity with students. What did they find easy about the activity? What was challenging? Did they o find what they did? Hang their drawings, pictures, and writing in your classroom to highlight the of mathematics all around us.
A	s a Group
tern	cuss with your colleagues the activity in "Into the Classroom" question 1. What did your students find in as of the mathematics around them? What did they struggle with? Note some ways you might build upor activity.

2.	Share your experiences with students transferring mathematical knowledge from one context to another. How can you bring their experiences into the classroom? Craft problems/activities together that build upon contexts that your students live daily. Note one problem/activity you will try with your class.
3.	Select two questions from the reflection questions at the end of the chapter to discuss as a group.

CHAPTER 5: Identity in Mathematics Education



Synopsis:

- Considers the role of identity in mathematics education
- · Explores what is meant by mathematics identity
- Examines research on the connections between identity and achievement in mathematics
- Considers the role of story problems in mathematics
- Gives strategies on how you can build on students' identities in your teaching



Reading Timeline (here's how you might divide the reading into manageable segments)

- Day 1: Read from the beginning of the chapter to the heading *Identity and Story Problems*.
- Day 2: Read from *Identity and Story Problems* to the end of the chapter.



1.	Reflect on your mathematics identity. Write a few paragraphs about your experiences with mathematics. That is, write a short mathematics biography.

2.	Reflect on the quote, "The idea that identity is not a necessary consideration in the teaching of mathematics serves to obscure the reality that identity is in fact being attended to, though not for all students." Whose identities are being attended to in your classes, in your school community, and beyond when it comes to mathematics?
1.	Into the Classroom (before group meeting) Have students write a math biography highlighting their experiences with mathematics. For younger children, have them draw a picture of themselves doing math (working with patterns, completing a puzzle, counting, playing with blocks, etc.).
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1.	Share ways in which you learn about your students and their identities.
2.	Bring in examples of math problems in context that you use with your classes. Whose values and experiences are valued in these? Consider how they may be rewritten to be centered on the lives of the students in your classes.
3.	Together create a mathematical problem/activity that builds upon the experiences of your students.

4.	Discuss what you learned from "Into the Classroom" activity 1 and how you can use what you learned about your students to support them in their learning of mathematics going forward.
5.	Select two questions from the reflection questions at the end of the chapter to discuss as a group.

Into the Classroom (after group meeting)

1.	Use the problems/activities you created in "As a Group" question 3 with your class. Reflect on how it went. What would you do differently next time?

CHAPTER 6: School Mathematics



Synopsis:

- · Considers how mathematics traditionally has been taught
- Explores pedagogical practices that allow us to challenge traditional views of what mathematics is and who can excel at it
- Reconsiders school mathematics to better support student learning
- Identifies ways you can challenge traditional beliefs about mathematics while engaging students in the meaningful study of mathematics



Reading Timeline (here's how you might divide the reading into manageable segments)

- **Day 1:** Read from the beginning of the chapter to the heading *How Can We Challenge Outdated Teaching Methods?*
- Day 2: Read from How Can We Challenge Outdated Teaching Methods? to the end of the chapter.



1.	In what ways are the classes you teach similar to those you took as a student? How do they differ?

As a Group	
1. Share your experiences with Chapter 5's "Into the Classroom" activities. What went well? What struggle with? How might you modify what you did going forward?	did you
2. Reflect on the quote, "With a focus on procedural understanding rather than conceptual understand may be able to solve problems, but they don't really understand the mathematics behind their work, see this play out in the classes you teach or in the classes you took when you were a student?	

3.	Discuss with your colleagues how you incorporate the practice standards and social-emotional learning into your teaching. What strategies do you and your colleagues employ? Where is there room for improvement? List one strategy you will try in the coming week.
4.	Reflect on the ways in which nontraditional teaching methods are and are not supported at your school. Consider, with your colleagues, the ways you can build upon the supports that do exist. What barriers exist to your implementing these pedagogies, and how might you work around them?

5.	Reflect on the difficulties and opportunities that exist around working with parents, especially when it comes to teaching in nontraditional ways.
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6.	Select two questions from the reflection questions at the end of the chapter to discuss as a group.



Use the recording chart at the end of this guide to record your efforts.

1.	Take one of your lessons and find ways to make students more actively engaged during it. Change even just one thing about the lesson to make students more active during it.
2.	Implement the strategy you highlighted in "As a Group" question 3. Reflect on how it went.

3.	Find out the history behind a certain concept you are teaching or a mathematician who worked on that concept and share this with students. Alternatively, connect some aspect of what they are learning this week to their experiences or to some aspect of society or popular culture.
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CHAPTER 7: Mathematics as Gatekeeper



Synopsis:

- Considers the role that mathematics plays as a gatekeeper to future success
- Explores the role of standardized testing in mathematics education
- · Reviews research in the theory of formal discipline
- · Considers alternatives to high-stakes standardized testing as forms of assessment
- Offers suggestions on how you can challenge the use of mathematics as a gatekeeper to future success and undertake authentic assessment



Reading Timeline (here's how you might divide the reading into manageable segments)

- **Day 1:** Read from the beginning of the chapter to the heading *Rethinking the Role of Mathematics Testing*.
- Day 2: Read from Rethinking the Role of Mathematics Testing to the end of the chapter.



1.	Reflect on the way that mathematics has stood as either a gatekeeper or a gateway in your own schooling experiences.

	As a Group Share your experiences with Chapter 6's "Into the Classroom" activities. What went well? What did you struggle with? How might you modify what you did going forward?
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	Discuss with your colleagues the ways in which mathematics stands as a gatekeeper for your students they move through their studies and lives.
2.	Discuss with your colleagues the ways in which mathematics stands as a gatekeeper for your students they move through their studies and lives.

3.	Reflect on the use of standardized exams in your school, district, province, or other area. How can you balance preparation for such exams with authentic learning and assessment?
4.	Reflect on the quote, "When testing drives instruction, 'rote learning and what many call drill and kill replace project-based exploratory approaches, to the detriment of students who benefit from varied teaching and learning strategies" (Kempf, 2016, p. 56). In what ways do you see this as true in your own school? In what ways is it not?

Together brainstorm non-test-based methods for assessing student learning of a particular topic in your class that you will teach in the coming week. Note how you might assess this topic.
Select two questions from the reflection questions at the end of the chapter to discuss as a group.
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Into the Classroom (after group meeting)

Use the recording chart at the end of this guide to record your efforts.

1.	Use the non-test-based method for assessing student work that you developed in "As a Group" question 5. How did it go? What did you learn about your students that you might not have learned using a more traditional assessment? What did you miss?
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CHAPTER 8: Achievement Gaps or Opportunity Gaps?



Synopsis:

- Reframes achievement gaps as opportunity gaps in mathematics
- · Considers what a lack of instructional and personnel resources means to mathematics teaching
- Explores how the move to remote learning due to the COVID-19 pandemic is an example of an opportunity gap
- Considers how you can use your privilege and position to challenge the existence of opportunity gaps in math and beyond, across educational settings



Reading Timeline (here's how you might divide the reading into manageable segments)

- **Day 1:** Read from the beginning of the chapter to the heading *Where Are the Opportunity Gaps, and Why Do They Persist?*
- Day 2: Read from Where Are the Opportunity Gaps, and Why Do They Persist? to the end of the chapter.



1.	province when it comes to resources and opportunities around mathematics learning? How does it compare to the school in which you work now with respect to these?

Group ur experiences with Chapter 7's "Into the Classroom" activities. What went well? What did y
with? How might you modify what you did going forward?

What messages do the conditions of your school, and the resources and opportunities therein, give to students about the value of their education? In what ways can these be improved?
Share your wish list from "During Reading" question 2 with your colleagues. How might you advocate for some of these items/opportunities/resources at your school or in your district? What allies can you draw upon to try and acquire some of the resources you feel are necessary? How can you let your needs with respect to this be known?

4.	Consider attending a school board meeting with your colleagues to advocate for the resources needed to improve the conditions of teaching and learning mathematics at your school. Write a letter to district/provincial leaders raising awareness of the need for resources at your school.
5.	Select two questions from the reflection questions at the end of the chapter to discuss as a group.

CHAPTER 9: Is the School System Broken?



Synopsis:

- Considers and challenges the argument that the public school system is broken
- Explores the differences in how schools serve students based on the historical development and purposes of public education
- · Considers multiple purposes for schooling
- Explores teacher professionalism
- Highlights ways to expand teachers' roles and influence in the educational system



Reading Timeline (here's how you might divide the reading into manageable segments)

- **Day 1:** Read from the beginning of the chapter to the heading Questioning the Existence of a Meritocratic System.
- Day 2: Read from Questioning the Existence of a Meritocratic System to the heading Teachers as Scapegoats.
- Day 3: Read from Teachers as Scapegoats to the end of the chapter.



1.	Reflect on how the schools that you attended fit within the five schools Anyon (1980) describes. How does the school in which you work fit within this model?

2.	Reflect on the ways in which you as an educator are treated as a professional and the ways in which you prevented from using professional autonomy.
3.	Select two questions from the reflection questions at the end of the chapter to discuss as a group.
E)	As a Group
1.	Reflect on the quote, "That a handful of individuals transcended a lack of opportunities to become wildly successful should not validate a system that fails to provide opportunities to all individuals in an equitab fashion." How do you see this play out in our society?

2.	Discuss what you feel are the purposes of schooling. What should they be?
3.	Develop with your colleagues an outline for a professional development opportunity based on this book or on any topic about which you all feel strongly. Propose a session to your school administration or submit a proposal to speak at a local conference.

CHAPTER 10: Teaching Mathematics as a Political Act



Synopsis:

- Discusses the ways mathematics education is a political act
- · Considers some non-European contributions to mathematics
- Explores the sociopolitical turn in mathematics education
- Explores a pedagogy called teaching mathematics for social justice
- · Highlights how you can teach mathematics in socially just ways



Reading Timeline (here's how you might divide the reading into manageable segments)

- **Day 1:** Read from the beginning of the chapter to the heading *The Sociopolitical Turn in Mathematics Education*.
- Day 2: Read from The Sociopolitical Turn in Mathematics Education to the heading Teaching Mathematics for Social Justice.
- Day 3: Read from Teaching Mathematics for Social Justice to the end of the chapter.



1.	Reflect on the ways in which the content you teach is non-neutral.

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I	pports and barriers exist at yo	pports and barriers exist at your school, in the broader	pports and barriers exist at your school, in the broader community, and	scuss the affordances and challenges of infusing social justice issues into your teaching. What pports and barriers exist at your school, in the broader community, and among the parents of tudents you teach?

3.	Design a lesson/activity that infuses a social justice issue or identify one that already exists from among the resources listed in the chapter or elsewhere. Discuss with your colleagues how you might implement this lesson. What challenges do you foresee? How might you address these?
4.	Select two questions from the reflection questions at the end of the chapter to discuss as a group.

Into the Classroom (after group meeting)

Use the recording chart at the end of this guide to record your efforts.

1.	Implement the <i>mathematics for social justice</i> lesson you designed in "As a Group" question 3 with your class. Reflect on what went well and what didn't. How might you change the lesson going forward? If possible, visit a colleague's class as they implement their <i>mathematics for social justice</i> lesson and discuss the lesson together afterward.

CHAPTER 11: Where Do We Go From Here?



Synopsis:

- Considers next steps for readers with respect to the content of the book
- Challenges readers to act upon what they have learned to challenge harmful beliefs that exist around mathematics and mathematics education
- Positions teachers, instructional leaders, and administrators as uniquely qualified to improve mathematics education in substantive ways



١.	Reflect on the quote, "Until we move past the current set of beliefs that many in society have about mathematics and mathematics education, we will continue to miss opportunities to ensure that many more among us grow to enjoy, appreciate, and understand mathematics." How might you work to move society past these beliefs?
2.	List one way that you can push back against the harmful beliefs that exist around mathematics and mathematics education.

	As a Group
1.	Share your experiences with Chapter 10's "Into the Classroom" activities. What went well? What did you struggle with? How might you modify what you did going forward?
2.	Reflect on and discuss the following poem. In what ways can you live the ideals of the poem in your daily work?
	I am only one,
	But still I am one.
	I cannot do everything,
	But still I can do something;
	And because I cannot do everything,
	I will not refuse to do the something that I can do.
	(Grover, 1909, p

4.	Consider the book as a whole. What did you like best? What did you like least? What will you use in your teaching? What will you disregard?
5.	Consider how you and your colleagues might share the lessons in this book and the work you did in the book study with others at your school and beyond. How far might your influence reach?

"INTO THE CLASSROOM" ACTIVITY RECORDING CHART

CHAPTER 1: What Does It Mean to Be Good at Math?

PROMPT: Take a closed problem that your group rewrote and implement it in your classroom.

ACTIVITY/STRATEGY:
What I Did:
What Worked:
What Worked.
What I Would Change:
What I Will Tarts De Degridenby
What I Will Try to Do Regularly:

PROMPT: With students, discuss what it means to be good at something. Have them develop a list of characteristics about how one becomes good at something.

ACTIVITY/STRATEGY:
What I Did:
What Worked:
What I Would Change:
What I Will Try to Do Regularly:

CHAPTER 2: Beyond Numbers and Equations:What Is Mathematics?

PROMPT: Incorporate a problem or activity you identified from an area not typically covered in the K–12 curriculum into your class this week.

ACTIVITY/STRATEGY:
What I Did:
What Worked:
What I Would Change:
What I Will Try to Do Regularly:

PROMPT: Ask students to share with you what mathematics is to them. As a class, create a word map or a collage using images they find in magazines or draw themselves. Push them to include a wide array of areas and images.

ACTIVITY/STRATEGY:
What I Did:
What Worked:
What I Would Change:
What I Will Try to Do Regularly:

CHAPTER 3: Mathematicians and Mathematicians in Training

PROMPT: Design an event with your colleagues where you invite a mathematically able person to speak to your students about how they use mathematics in their lives.

ACTIVITY/STRATEGY:
What I Did:
AMI - LAMI - L
What Worked:
What I Would Change:
What I Will Try to Do Regularly:

PROMPT: Choose a mathematician from a diverse background whose story you will share with your class. You can do this by reading one of the picture books listed, viewing a film, or incorporating the story in some other way. Ask your students to reflect on the story and share their thoughts about the mathematician.

ACTIVITY/STRATEGY:
What I Did:
What Worked:
What I Would Change:
What I Will Try to Do Regularly:

CHAPTER 5: Identity in Mathematics Education

PROMPT: Create a problem/activity that builds upon the experiences of your students and implement it.

ACTIVITY/STRATEGY:
What I Did:
What Worked:
What I Would Change:
What I Will Try to Do Regularly:

CHAPTER 6: School Mathematics

PROMPT: Implement one strategy for incorporating the practice standards or social-emotional learning into your teaching.

ACTIVITY/STRATEGY:
What I Did:
What Worked:
What I Would Change:
What I Will Try to Do Regularly:

PROMPT: Take one of your lessons and find ways to make students more actively engaged during it. Change even just one thing about the lesson to make students more active during it. Implement the revised lesson.

ACTIVITY/STRATEGY:
What I Did:
What Worked:
What I Would Change:
What I Will Try to Do Regularly:

PROMPT: Find out the history behind a certain concept you are teaching or a mathematician who worked on that concept and share this with students. Alternatively, connect some aspect of what they are learning this week to their experiences or to some aspect of society or popular culture.

ACTIVITY/STRATEGY:
What I Did:
What Worked:
What I Would Change:
What I Will Try to Do Regularly:

CHAPTER 7: Mathematics as Gatekeeper

PROMPT: Use the non-test-based method you developed for assessing student work.

ACTIVITY/STRATEGY:	
What I Did.	
What I Did:	
What Worked:	
WE LINE LIGHT	
What I Would Change:	
What I Will Try to Do Regularly:	

CHAPTER 10: Teaching Mathematics as a Political Act

PROMPT: Implement the *mathematics for social justice* lesson you designed with your class.

ACTIVITY/STRATEGY:
What I Did:
What Worked:
What I Would Change:
What I Will Try to Do Regularly:

References

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