



High School Mathematics Reimagined, Revitalized, and Relevant **Book Study**

Chapter 1

Discussion Questions

1. What are the key challenges regarding students' perceptions of mathematics highlighted in this chapter?
2. How can we shift from a focus on content coverage to student-centered learning?
3. What strategies can we use to make mathematics more relevant to students' lives and future careers?
4. How does our current high school mathematics program impact students' beliefs in their mathematical abilities?
5. How can we reimagine our approach to teaching mathematics to make it more relevant and meaningful to students?
6. What are the systemic issues highlighted in this chapter that affect students' mathematical experiences?
7. Which policies or structures should be changed to facilitate reimagined mathematics education?

Extension Activities

- Examine case studies where schools successfully reimaged their mathematics curriculum. Discuss the challenges and successes.
- Discuss the "Pause and Reflect" questions presented in the chapter. How do your current practices align with the goals of reimagining mathematics learning?

Chapter 2

Discussion Questions

1. How can mathematical modeling be integrated into your current curriculum?
2. What real-life contexts can be incorporated into your mathematics lessons to increase student engagement?
3. How does mathematical modeling help students understand and apply mathematical concepts in real-world scenarios?
4. How can mathematical modeling increase student engagement and understanding?
5. How can the school or district include mathematical modeling in their mathematics curriculum?
6. What resources or professional development do teachers need to effectively teach mathematical modeling?



Extension Activities

- Analyze examples of mathematical modeling problems. How can you adapt these for your classroom?
- Develop a lesson plan that includes mathematical modeling. Share and critique the lesson plans within the group or a PLC.

Chapter 3

Discussion Questions

1. What are the main criticisms of the current structure of high school mathematics discussed in the chapter? Do you agree with them? Why or why not?
2. How do the five NCTM Crosscutting Concepts aim to create meaningful connections in mathematics? Which of these concepts do you believe would be most impactful in your classroom?
3. How would you ensure that all students receive a comprehensive and connected mathematics education?
4. What barriers exist that prevent equitable participation in mathematics at your school/district?
5. How do current pathways in mathematics affect student outcomes?
6. What alternative pathways can you develop to better meet the needs of all students?
7. How can the structure of mathematics education be altered to support a broader range of student goals and interests?

Extension Activities

- Review your current mathematics curriculum and identify areas that may benefit from incorporating the five Crosscutting Concepts. Propose specific changes to make the curriculum more cohesive and relevant to students.
- Create a concept map that integrates the chapter's main ideas (Patterns and Generalization, Variability and Change, Functional and Structural Thinking, Comparison and Equivalence, Making Predictions) into your teaching. How can these ideas be linked together to create a more comprehensive understanding of mathematics?

Chapter 4

Discussion Questions

1. How do your instructional practices influence students' views of mathematics and themselves as learners?
2. What strategies do you use to make mathematics learning relevant and engaging for students?
3. How can you integrate the eight Mathematics Teaching Practices into your daily instruction to enhance student learning?
4. What are the key mathematical and statistical processes you want your students to develop?
5. How do you create opportunities for students to see the relevance and utility of mathematics in their lives?
6. The text argues for de-emphasizing traditional routine procedures in favor of reasoning and conceptual understanding through technology. How do you strike a balance between teaching necessary mathematical skills and leveraging technology for deeper understanding?
7. How do you see the role of technology in achieving the goal of developing students' enduring mathematical understanding? In what ways can technology be both a support and a challenge in teaching mathematics?

Extension Activities

- Collaborate with teachers to identify and address barriers to implementing effective instructional practices.
- Create a visual map of current mathematics pathways and explore potential alternatives.
- Discuss how alternative pathways might impact student engagement and success.

Chapter 5

Discussion Questions

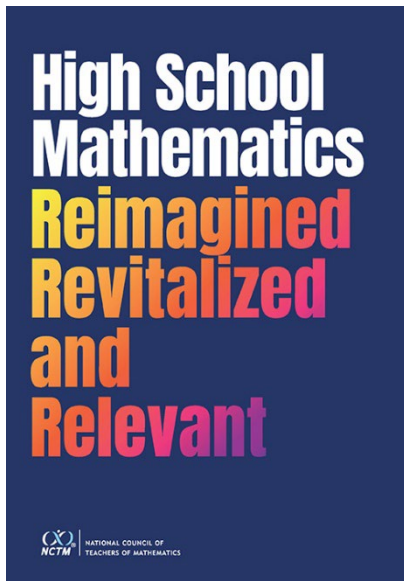
1. What are the key factors in sustaining long-term change in mathematics education?
2. How can we build a culture that supports continuous improvement and innovation in mathematics teaching?
3. What role does professional development and collaboration play in sustaining change?

Extension Activities

- Develop a plan for implementing and sustaining changes in your mathematics program.
- Establish ongoing peer support groups to share experiences and strategies for sustaining change.



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To learn more about *High School Mathematics Reimagined, Revitalized, and Relevant*:

nctm.org/HSreimagined



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