

COURSE SYLLABUS

Course: Common Core State Standards in Mathematics, Grades 3 – 8

Presenters: Tim Kanold and Diane Briars

Hours: 45

Required eBook: *Common Core Mathematics in a PLC at Work™ Grades 3-5* (Tim Kanold, Series Editor, Solution Tree Press, 2012)

Course Overview

In this timely and practical course, Dr. Tim Kanold and Dr. Diane Briars explore what every educator needs to know to fully embrace the Common Core State Standards (CCSS) in Mathematics. The presenters' approach is both motivational and down-to-earth; they explain both the “whys” and the “how-to’s” for implementing the Common Core.

This course includes strategies for teaching for understanding, tools for planning lessons and evaluating assessments, and classroom-ready tasks that will allow teachers to put theory into practice. You'll hear commentary from teachers and administrators piloting the CCSS in the Albuquerque Public Schools, and visit classrooms to see the results. This course is the perfect guide for professional learning communities seeking to improve their mathematics programs.

Presenters' Bios

Tim Kanold, Ph.D., is an award-winning educator, author, and consultant. He is former director of mathematics and science, and served as superintendent of Adlai E. Stevenson High School District 125, a model professional learning community district in Lincolnshire, Illinois.

Dr. Kanold is a past president of the National Council of Supervisors of Mathematics (NCSM) and coauthor of several best-selling mathematics textbooks over several decades. He has served on writing commissions for the National Council of Teachers of Mathematics. He has authored numerous articles and chapters on school leadership and development for education publications over the past decade.

Dr. Kanold received the prestigious international 2010 Damen Award for outstanding contributions to the leadership field of education from Loyola University Chicago, 1986 Presidential Award for Excellence in Mathematics and Science Teaching, and 1994 Outstanding Administrator Award (from the Illinois State Board of Education). He serves as an adjunct faculty member for the graduate school at Loyola University Chicago.

Dr. Kanold earned a bachelor's degree in education and a master's degree in mathematics from Illinois State University. He completed a master's in educational administration at the University of Illinois and received a doctorate in educational leadership and counseling psychology from Loyola University Chicago.



Diane Briars, Ph.D., a mathematics education consultant, was mathematics director of Pittsburgh Public Schools for 20 years. Under her leadership, Pittsburgh schools made significant progress in increasing student achievement through standards-based curricula, instruction, and assessment. She is past president of the National Council of Supervisors of Mathematics and codirector of the Algebra Intensification Project. Dr. Briars began her career as a secondary mathematics teacher.

Dr. Briars has been a member of many committees, including the National Commission on Mathematics and Science Teaching for the 21st Century. She has served in leadership roles for various national organizations, including the National Council of Teachers of Mathematics, the College Board, and the National Science Foundation.

She earned a PhD in mathematics education, an MS and a BS in mathematics from Northwestern University.

Course Objectives

After completing this course, educators will know:

- The five paradigm shifts essential to the adoption of the Common Core State Standards
- The roles of professional learning communities and collaborative teams

Student Learning Outcomes

After completing this course, educators will be able to:

- Plan lessons that
 - Support the eight Mathematical Practices
 - Maintain high cognitive demand
 - Include assessing and advancing questions for formative assessment
 - Meet the needs of all learners

Unit 1: Common Core State Standards and Professional Learning Communities

In this unit, Dr. Kanold defines the role of a grade-level collaborative team, a key component of a professional learning community, presenting four questions that should guide the team's work. Albuquerque educators weigh in on the practical benefits of collaboration.

Unit Objectives

After completing this unit, educators will know:

- The roles of professional learning communities and collaborative teams as part of the implementation of the CCSS



Student Learning Outcomes

After completing this unit, educators will be able to:

- Identify reasons for undertaking the teaching of mathematics as part of a collaborative team, and make plans for doing so

eBook: Using High-Performing Collaborative Teams for Mathematics

Participants read “Chapter 1: Using High-Performing Collaborative Teams for Mathematics” in the eBook of *Common Core Mathematics in a PLC at Work™ Grades 3-5*, and respond to the questions that follow.

Unit 2: Standards for Mathematical Practice

In this unit, Dr. Kanold introduces the eight Mathematical Practices, and Dr. Briars delves into the strategies that make these practices come alive in the classroom. Two examples, the McDonald’s Task and the Button Task, illustrate how classroom activities can be designed to focus on Common Core practices such as “making mathematical arguments and critiquing the reasoning of others.” Educators get a rare opportunity to observe classrooms where students are engaged in mathematical exploration, with a “here’s what you saw” follow-up from Dr. Briars. Participants also learn how to analyze cognitive demand, and how to maintain it at the desired (high) level. Finally, practical experience is provided in using the Thinking Through a Lesson Protocol (TTLP), a tool for planning lessons in collaboration. Classroom teachers describe the structures and routines they use to facilitate group work.

Unit Objectives

After completing this unit, educators will know:

- How the eight Mathematical Practices of the CCSS will transform instruction

Student Learning Outcomes

After completing this unit, educators will be able to:

- Use instructional strategies that foster the eight Mathematical Practices
- Analyze the cognitive demand of instructional tasks
- Devise ways to increase the cognitive demand of low cognitive demand tasks
- Use the Thinking Through a Lesson Protocol (TTLP) to plan a lesson
- Implement classroom structures and routines that create a classroom environment conducive to high cognitive demand tasks



eBook: Implementing the Common Core Standards for Mathematical Practice

Participants read “Chapter 2: Implementing the Common Core Standards for Mathematical Practice” in the eBook of *Common Core Mathematics in a PLC at Work™ Grades 3-5*, and respond to the questions that follow.

Unit 3: Standards for Mathematical Content

In this unit, participants investigate the Content Standards of the Common Core, reviewing selected “domains” for changes in content. Dr. Kanold provides an overview, and Dr. Briars explores key advances in the way students are expected to conceptualize mathematics. The importance of mathematics strategies vs. algorithms is discussed, with a shift in focus from “What answers will they be able to get?” to “What mathematics will kids get from this?” The Thinking Through a Lesson Protocol is also revisited.

Unit Objectives

After completing this unit, educators will know:

- How the CCSS for Mathematical Content will affect instruction at their own grade levels
- Key advances in thinking about mathematical content
- The difference between strategies and algorithms, and why it’s important to be able to use both

Student Learning Outcomes

After completing this unit, educators will be able to:

- Identify next steps to be taken by their collaborative teams to address the Content Standards of the CCSS

eBook: Implementing the Common Core Mathematics Content in Your Curriculum

Participants read “Chapter 3: Implementing the Common Core Mathematics Content in Your Curriculum” in the eBook of *Common Core Mathematics in a PLC at Work™ Grades 3-5*, and respond to the questions that follow.

Teachers in grades 6, 7, and 8 read a PDF of a corresponding chapter, appropriate to their grade levels.

Unit 4: Implications for Assessment Design

In this unit, Dr. Kanold introduces the role of assessment in the Teaching - Assessment - Learning Cycle. Dr. Briars leads educators through a kid-friendly, high cognitive demand task, the Hexagon Train, in which students find the perimeter of a “train” of hexagons. Participants consider the task from a student’s perspective, looking for patterns and describing their thinking. Dr. Briars explores the use of assessing



and advancing questions to provide in-the-moment feedback on student progress. She uses two more classroom-ready tasks to demonstrate the use of student work as the basis for Re-Engagement Lessons in which misconceptions are addressed.

Unit Objectives

After completing this unit, educators will know:

- The role of formative assessment in the Teaching - Assessment - Learning Cycle
- The role of collaborative teams in creating, evaluating, and grading common assessments

Student Learning Outcomes

After completing this unit, educators will be able to:

- Ask assessing and advancing questions to gauge student understanding and move learning forward
- Use student work as the basis for creating Re-Engagement Lessons
- Use the Assessment Instrument Evaluation Tool to evaluate common assessments

eBook: Implementing the Teaching-Assessing-Learning Cycle

Participants read “Chapter 4: Implementing the Teaching-Assessing-Learning Cycle” in the eBook of *Common Core Mathematics in a PLC at Work™ Grades 3-5*, and respond to the questions that follow.

Unit 5: Meeting the Needs of All Learners

In this unit, Dr. Kanold describes Response to Intervention as a required response to “What are we going to do when students don’t master the learning targets?” He outlines what happens to assist struggling students at each of three tiers/levels of need. Dr. Briars concludes the session with strategies for adapting lessons for struggling students or English Language Learners, without sacrificing high cognitive demand. She also touches on ways to challenge advanced students without resorting to busywork or challenging projects that offer little “math per minute.”

Unit Objectives

After completing this unit, educators will know:

- How to adapt lessons to meet the needs of all learners



Student Learning Outcomes

After completing this unit, educators will be able to:

- Adapt lessons for struggling students without reducing cognitive demand
- Adapt lessons for English Language Learners without reducing cognitive demand
- Adapt lessons for advanced students in a way that increases their understanding of mathematics

eBook: Implementing Required Response to Intervention

Participants read “Chapter 5: Implementing Required Response to Intervention” in the eBook of *Common Core Mathematics in a PLC at Work™ Grades 3-5*, and respond to the questions that follow.

Conclusion

In this final unit, Dr. Kanold provides closing thoughts on how to get started, and how to transition to the Common Core State Standards as a multi-step, multi-year process. The Albuquerque teachers get the last word, describing their mathematical mission and a collaborative environment where their practice is more reflective, but not more difficult.

In the words of one middle-school teacher, “When I was first introduced to the Common Core standards . . . I was so happy. Because it’s almost like I’m coming home to the way I was taught to teach . . . I’m not just throwing concepts at [the students] anymore, with the Common Core. I am focusing in on a lifestyle using mathematics.”

Unit Objectives

After completing this unit, educators will know:

- The reasons for the critical shifts in our thinking about the teaching of mathematics

Student Learning Outcomes

After completing this unit, educators will be able to:

- Map out the next steps for their work as individuals and collaborative teams transitioning to the CCSS in Mathematics

Methods of Instruction

- Videos (presentations consisting of lecture, interviews, and classroom footage)
- Text (units based on required reading)



- Reflection questions (open-ended questions at intervals throughout the video presentations where participants are asked to reflect on the course content, their own practice, and their intentions for their practice)
- Quizzes (selected-response quizzes to assess understanding of the video presentations and eBook content)

Plagiarism Policy

KDS recognizes plagiarism as a serious academic offense. Plagiarism is the passing off of someone else's work as one's own and includes failing to cite sources for others' ideas, copying material from books or the Internet (including lesson plans and rubrics), and handing in work written by someone other than the participant. Plagiarism will result in a failing grade and may have additional consequences. For more information about plagiarism and guidelines for appropriate citation, consult plagiarism.org.

Passing Requirements:

In order to complete the requirements of the course, the participant must complete all course work (e.g., reflections, quizzes, and any midterm and/or final), including watching all videos and participating in all discussion forums. We do not award partial credit.

- Quizzes 40% of total grade
- Reflection Questions 60% of total grade

KDS Self-Assessment Rubric:

	Distinguished	Proficient	Basic	Unsatisfactory
Quizzes	100% Correct	80% Correct	60% Correct	0-40% Correct

	Distinguished	Proficient	Basic	Unsatisfactory
Reflection Questions	Participant provides rich detail from the content of the course in his or her responses Participant makes his or her responses to the questions personally meaningful	Participant includes appropriate content from the course in his or her responses Participant makes thoughtful comments in direct response to the questions	Participant includes some content from the course, usually appropriate, in his or her responses Participant answers the questions directly, not always fully	Participant includes no content from the course in his or her responses Participant does not address the questions posed