Course Syllabus:

How to “Read and Write” in Math: Improving Problem Solving and Communication in Mathematics

CE Credits Online™

How to “Read and Write” in Math: Improving Problem Solving and Communication in Mathematics

45 Hours or 3 Graduate Credits

Course Description:

An in-depth exploration of teaching systematic approaches for solving math word problems and developing written communication skills to describe solution processes. Teachers will learn a wide range of strategies to develop students’ skills in the math problem-solving tasks of:

- comprehending the problem and identifying relevant data
- analyzing the problem’s internal structure to determine what type of problem it is
- selecting a viable solution process and carrying it out
- explaining the solution process both orally and in writing.

Course Objectives: By the end of the course, participants will:

- explore a wide range of instructional strategies for math problem solving and math communication
- learn to create exciting math lessons that are challenging and achievable for all your students
- find a focus on strategies that can be applied across all grade levels in mathematics
- learn practical ideas and instructional strategies that they can immediately use with their students
- look at teaching strategies that can help students accomplish the four main tasks of problem solving:
    - understanding the problem and what it is asking
    - analyzing the problem to determine its structure
    - choosing a solution process and carrying it out correctly
    - explaining that process, both orally and in writing

Student Expectations:

This online course is experiential and interactive. Participants will engage in a variety of activities to learn, practice, and apply the skills outlined in the course. This will include workbook exercises, short answers that are reviewed by a moderator, quizzes, observation and analysis of lessons, coaching interactions with a coaching partner that include feedback and analysis of both the lesson and the coaching episode. A final exam is also a part of the course. Participation in all of these areas is necessary for students to successfully complete the course with a passing grade.

Grading:

- **Forum Post Exercises/ Reflective Journals:** 70% of your final grade
- **Quizzes:** 10% of your final grade. Quizzes may be submitted up to 3 times each and the highest score of the 3 will be used.
- **Final Exam:** 20% of your final grade. **You must receive a score of 60% or greater on the final exam to pass this course.**
- You must have an 80% average to obtain university credit for any course. You must have an 80% average to pass the course unless your district has specified otherwise. If your district has specified a different percentage needed to pass, it will be posted in “Your District Information” in the District section of the site. If nothing is posted, you must pass with an overall average of 80%.
- Forum post exercises will not be approved until your entry has met the minimum approval score of 80%.

Credit:

- For those taking this course for credit, upon completion, the necessary paperwork will be submitted to the university that was selected at the time of purchase. Please see University Partners on our homepage for more information.
- For those taking this course for a Certificate of Completion, one will be emailed upon successful completion that may kept for your records.

Class Outline:

- Lesson 1
  - 1.a Introduction
  - 1.b What Do Emotions Have to Do With It?
  - 1.c What Can Go Wrong in Problem Solving?
- Lesson 2
  - 2.a Now a Word From the Experts
  - 2.b Classroom Strategies For Improving Math Problem Solving
- Lesson 3
  - 3.a How to Read a Math Word Problem – And Understand It
  - 3.b Looking for Deep Structures
- Lesson 4
  - 4.a What Do Successful Problem Solvers Do?
  - 4.b Using Polya’s Steps in Your Own Teaching
  - 4.c A Menu of Problem Solving Strategies
- Midterm

- Lesson 5
    - 5.a Teaching Specific Strategies
    - 5.b Using Multiple Strategies
    - 5.c How Did Middle School Students Solve It?
- Lesson 6
    - 6.a Questions That Make Students Think
    - 6.b Have I Ever Seen This Problem Before?
- Lesson 7
    - 7.a Communication in Mathematics
    - 7.b Math Journals
    - 7.c But I’m Not An English Teacher
- Lesson 8
    - 8.a Implementing Student Self Assessment
    - 8.b How to Know When Students Are Improving Conclusion
- Post Survey
- Evaluation
- Final Exam

Course Access:

Upon enrollment, you have 180 days to complete your online course in our eClassroom. If you have any questions about course access, please email support@cecreditsonline.org, create a customer service ticket in the LMS, or call 425-788-7275 extension 104.

Compliance with and Commitment to the American Disabilities Act:

In compliance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act, participants who have any condition, either permanent or temporary, which might affect their ability to complete this course, are encouraged to reach out to support@cecreditsonline.org at the beginning of the course. We will make reasonable academic and accessibility accommodations to the course.

Academic Integrity Policy:

Honesty is an essential aspect of academic integrity. Individual students are responsible for doing their own work and submitting original assignments as per the course directions. Individual students are responsible for doing their own work. Plagiarism and cheating of any kind will not be tolerated. This includes using information from the Internet without citing the

website. Avoid plagiarism by appropriately acknowledging the source of the author’s words and ideas.