Idaho State University | Albion Center for Professional Development

Scientific Writing in Middle School

Course Syllabus

Course Description

This course provides an in-depth exploration of strategies to promote scientific literacy in middle school classrooms, with a specific focus on the Claim, Evidence, and Reasoning (CER) framework. You will examine how CER's support the development of critical thinking, scientific argumentation, and effective communication of scientific ideas. Through exploration and reflective practices, you will learn to design differentiated CER-based lessons tailored to diverse learning needs. Topics will include creating strong claims, identifying and integrating varied forms of evidence, crafting sound reasoning, and addressing counter arguments. The course will also emphasize the integration of cross-disciplinary approaches, such as incorporating elements of language arts and social sciences to deepen your understanding of scientific concepts. This course is ideal for education majors, pre-service teachers, and anyone interested in building a strong foundation in science instruction for middle school learners.

This course enhances classroom teaching effectiveness and supports improved student outcomes by introducing new knowledge in the Claim, Evidence, and Reasoning (CER) framework to promote scientific literacy, critical thinking, and differentiated instruction in middle school science.

Course Objectives

At the end of this course you should be able to:

1. Develop an understanding of scientific literacy and the role of effective writing in middle school science.
2. Construct a well-organized scientific argument using the CER framework.
3. Identify and evaluate appropriate evidence within the CER framework.
4. Analyze and construct reasoning within the CER framework by linking evidence to the claim to justify your argument.
5. Analyze articles, data, and videos to identify key information and construct a well-organized CER.
6. Differentiate CER instruction by supporting diverse learners, using varied resources, and providing effective feedback.

Modules

- Module 1: Scientific Literacy, Quiz 1
- Module 2: Introduction to CER, Quiz 2
- Module 3: The EVIDENCE in CER, Quiz 3
- Module 4: Reasoning - The Final Part, Quiz 4
- Module 5: Ways to Use CER's, Quiz 5
- Module 6: Differentiation, Quiz 6

Grading

Each quiz must be passed at an 80% or higher (three attempts allowed).

Format

This is a self-paced, asynchronous (no required live meetings) course. Throughout the PD course, you will find it helpful to take notes along the way to assist with the quizzes. Within each module, you will find reflection assessments that are not graded but will help in your journey through the course. There is an interactive forum in the course to help you connect with peers and instructors, share ideas, and collaborate on best practices throughout your learning journey.