Idaho State University | Albion Center for Professional Development

Scientific Literacy in Education

Course Syllabus

Course Description

This course aims to increase scientific literacy while introducing education professionals to the core ideas of scientific investigation. The course covers a variety of topics, including the nature of science, the scientific method, scientific reasoning, and scientific communication. Students will participate in practical exercises, case studies, and discussions throughout the course to help them better understand the scientific method, how scientific information is produced, and how it can be applied in education and education administration. Additionally, students will learn how to assess arguments and supporting data, as well as how to differentiate between trustworthy and questionable information sources. The emphasis of the course will be on the value of scientific literacy and how it can be utilized to make informed decisions on broader issues in education. Additionally, students will learn how to critically assess the social and cultural consequences of scientific information as well as the ethical issues that are inherent in scientific research.

This course enhances classroom teaching effectiveness and supports improved student outcomes by introducing new knowledge in a comprehensive understanding of the scientific process, with strategies to evaluate scientific information, promote scientific literacy, and communicate science effectively in educational settings.

Course Objectives

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

1. Demonstrate a fundamental understanding of the scientific process by outlining the steps of the process and providing one example of its application in a chosen field.
2. Identify the sections of a peer-reviewed academic article and explain the role of open science and replication by annotating one published study.
3. Describe the scientific publication process and identify at least two historical or current biases in publication by creating a brief timeline or infographic.
4. Evaluate the credibility of at least two scientific sources by using a standardized rubric to assess the validity of claims and supporting data.
5. Design a sample lesson plan that integrates a research-based concept using evidence-based pedagogical practices and promotes scientific literacy.
6. Present a short educational talk or written summary that clearly communicates a scientific concept and its significance to a student audience.

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Modules

- Module 1: Introduction to Science and Scientific Literacy, Quiz 1
- Module 2: Anatomy of a Scientific Paper & Open Science, Quiz 2
- Module 3: Potential Sources of Bias in the Publication of Science, Quiz 3
- Module 4: Identifying Areas of Concern with Scientific Studies, Quiz 4
- Module 5: Improving Scientific Literacy in the Classroom, Quiz 5
- Module 6: Communicating Science at a Broader Level, 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.