Science Learning Communities

- First two semesters at TAMU-CC
- Students enroll in Biology and Chemistry (100-250 students)
- Sections of 24 students
- Co-enrolled in Seminar, Composition, and labs

Increasing critical thinking in second semester science students through peer review

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Interdisciplinary Research Experiment

- Collaborative, semester-long learning community project
- Students propose, design, and conduct original research
- Observational only, no human interaction with subject

Goals of Redesign

- Incorporate activities to specifically increase critical thinking
- Use peer review to shift responsibility from instructor back to students
- Build stronger assignment sequence leading up to experiment
- Require students to identify observational research studies related to their topic which have been published in peer-reviewed scientific journals.

Redesigned Components

1) Students will analyze observational research studies related to their topic which have been published in peer-reviewed scientific journals.
   Use template assignment requiring students to identify the hypothesis, methods, data, analysis, etc.

2) Groups will present their preliminary experimental design during class.
   Peers and instructors will provide oral and written feedback to assist groups in refining their experimental design.

3) After completing a pilot of their study, an updated experimental design along with preliminary data will be posted as a BlackBoard discussion.
   Students will comment on peers’ group projects to help mitigate potential problems in advance.

Assessment

Each of the redesign components will be low stakes.

Grades recorded based on presentation of the group’s project ideas as well as individual participation in peer review process.

Final PowerPoint presentation will include experimental design and results.

Groups will continue to submit a full research proposal.

Major graded component in Seminar.

Student Learning Outcomes

Literacy
- Effectively read and comprehend scientific articles, reports, and books.
- Understand the role and purpose of different forms of science literature.
- Effectively use library research tools to research on science topics.

Scientific Reasoning
- Apply scientific principles to make decisions.
- Understand the nature of scientific research.
- Understand the scientific method.
- Understand and apply the conventions of science discourse.
- Apply concepts of biology and chemistry to new situations.

Mathematical Analysis
- Understand the role of mathematics in science.
- Be able to use mathematics such as graphs and basic statistics to support scientific hypotheses.

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