



Chemistry: Student-led discussions in the Senior Seminar

Senior Seminar course by Dr. Walter J. Bowyer, Janet A. Kaydos, and colleagues, Hobart and William Smith Colleges' Department of Chemistry, Geneva, New York (1997)

Course Design:

The Senior Seminar at Hobart and William Smith Colleges is designed to give students an in-depth understanding of current research by exposing them to the field's primary literature. The Colleges' academic calendar consists of three ten-week terms; the Senior Seminar is a required course that meets one hour per week all three terms. Around 1994, the Senior Seminar was reorganized and reconceptualized due to student and faculty dissatisfaction. In order to prompt students to conduct more extensive independent research, to connect the variety of themes brought up throughout the course, and to promote active learning, the course was based on a broad subject, such as archeological chemistry or forensic chemistry, chosen by the students at the end of the previous academic year.

At the beginning of the year, each student chooses a discussion topic from a list of topics related to the course's broad subject. The instructors provide a leading reference article on the topic, and the student is responsible for reading the article and providing a copy of the articles and a list of discussion questions for the class to review before he or she leads a discussion of the article the following week. The discussion leader is graded on knowledge and preparedness while the rest of the class is given a satisfactory or unsatisfactory grade based on their participation. At the end of the first term, the students turn in a brief (4-6 page) research paper on the subject of their presentation.

In the second (winter) term, the students select a new topic within the same broad subject area on which they are expected to present a formal 45-minute seminar. Students are required to practice their talk in front of a faculty member and must provide at least one leading reference to the class one week before their presentation. The presenter is again evaluated on knowledge and preparedness, and the class is

evaluated on participation. At the end of the second term, students submit a 6-10 page paper on their presentation topic.

In the third term, students present one last seminar for which the subject matter is unrestricted. The same criteria are used for the presentations, the research papers, and the class participation. During the spring term, student presentations are interspersed with guest speakers from other universities.

Higher Level Learning:

The exercise of reviewing primary literature and communicating this information in a class in either a class discussion or presentation format enables students to become more critical consumers of research and better presenters of information (**Acting**). Class discussions lead to stronger papers, because students can address in their papers any weaknesses in their research that became apparent during the class discussion (**Acting, Learning**). The cohesiveness of discussions and presentations based on a single, broader subject leads to a better understanding of how chemists use primary sources (**Learning**) and of how different kinds of chemistry research complement each other to elucidate a particular subject (**Connecting**).

Active Learning:

Students are directly involved in the learning process through their own contributions throughout the course as presenters and participating class members (**Doing, Observing**). At the end of each class discussion, presentation, or guest lecture, students have the opportunity to engage in discussions about the material presented and how it related to material previously discussed (**Dialogue with Others**).

Bowyer, W. J. & Kaydos, J. A. (1997). A novel format for seminar during the senior year of the college chemistry curriculum. *Journal of Chemical Education*, 74 (2) pp.184-185.