Semester: 97-2 Regular

EDUC 476 - 4 Designs for Learning: Natural Sciences (Secondary)

Mondays 13:00 - 16:50

Section: D2.00

Instructors: M. Bowen & D. Boote
Office: 7601mpc
Tel: 291-3791
E-mail: gmbowen@sfu.ca & dboote@sfu.ca

PREREQUISITE

* Educ 401/402
* Familiarity with e-mail and Internet browser, and CCN (UNIX) account activated for first day of course.

COURSE DESCRIPTION

Course instruction will be divided into two halves with MB being responsible for the first half and DB for the second. Themes will penetrate each half of the course. The first half of the course will generally be structured around developing broad understandings of the processes of science itself, their connections to classroom teaching, and open inquiry learning environments. The second half will focus on day-to-day issues that provide the context for learning science.

The following is an outline of topics to be discussed during the course. This outline is not exhaustive and may include some topics which will not be covered. Additional topics may be added at the discretion of the instructor as the semester progresses or as students may request.

1. What is the nature of scientific knowledge? What is science? How is science knowledge constructed?
2. Problem solving. Open-inquiry laboratory activities. What is the Scientific Method?
3. Students' views of scientific concepts.
4. Analysing and improving science teaching.
5. The integration of science, mathematics, and technology (computer and other).
6. Collaborative concept mapping and Vee-mapping.
7. Teacher learning and change.
8. Reflective practice in science teaching.

Additional topics may include: action research, models of learning and teaching science, diversity and gender in science, Integrated Resource Packages, constructing your own equipment, safety, standardised exams, expertise. Others will be considered.

REQUIREMENTS

20% -- independently negotiated with one or both instructors to meet individual student needs
First half - MB
10% -- field notes, Vee-map, & concept map reports of field investigation (over 4 weeks)
15% -- peer teaching exercise, critique of that of 3 others, short paper on rationale for approach
10% -- 4 reflections (400-600 words) on assigned readings using electronic mail
Second half - DB
20% -- report and seminar on topic from list above or other
15% -- negotiated to meet needs of group

Note: The remaining 10% of your grade will be based on our assessment of your performance in class. This includes submission of at least 5 curriculum ideas/resources to the electronic mail list over the duration of course.

REQUIRED READINGS (Articles will be available to photocopy in the CET. "READING #1" must be read before the first period. It will be available 1 week before the start of the course.)

* Ministry of Education, Integrated Resource Package for 8-10 Science.

RECOMMENDED READINGS (available on 24-hour reserve at the library.)

* Joyce, B., Weil, M., & Showers (1996) Model of Teaching. Englewood Cliffs, NJ: Prentice Hall.
* Roth, W.M. (1995) Authentic School Science: Knowing and Learning in Open-inquiry Laboratories. Boston: Kluwer Academic Publ.
* Bosak, S.V. (1991) Science Is. Richmond Hill, Ontario: Scholastic Canada.
* Trowbridge, L.W. & Bybee, R.W. Becoming a Secondary School Science Teacher. Toronto: Merrill.
* Hassard, J. (1992) Minds on Science: Middle and Secondary School Methods. New York: Harper Collins.

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