

EDUCATION 476 - 4
DESIGNS FOR LEARNING : NATURAL SCIENCES
May 9 - June 17, 1988 - Monday & Wednesday, 1:00 - 4:50 p.m.
Location: MPX 7500 — Abour Cherif

RATIONALE

Teaching science to children (our future generation) is recognized as an important part of the school curriculum. These past few years have seen a renewed emphasis on science in the K-12 school levels. Much of this was inspired by the report, Educating Americans For The 21st Century, and Science For Every Student, produced by the national science board commission on precollege education in mathematics, science and technology, (U.S.A.) and the science council of Canada respectively.

Many arguments exist for the teaching of science to young children. The most convincing is that science is an important part of our culture and children simply need to be exposed to it. Those who have not been exposed to science during their schooling may well be at a disadvantage throughout their lives. Furthermore, there is a tendency to blame the lack of positive attitudes toward science among the public on poor science teaching in K-12 school levels.

AIM

The aim of this course is to explore effective ways of teaching science to student science teachers and future science educators in B.C. The course also focuses on applying what is covered in the course to micro teaching situations. By the end of the course students should have a sufficient background necessary for both designing curriculum and teaching science.

TOPICS

This course will examine the following topics; students will have the opportunity in the first meeting to suggest other topics they feel necessary to their development as teachers.

The nature of science and science education.

What is science? What is science education? How does the nature of science affect teaching and learning science?

Reform in science education.

Historical review in the reform in science education in North America. Factors control curriculum reform and choices.

Science curriculum.

The science curriculum as prescribed, curriculum models, the science curriculum as practiced, the influence of various societal and educational trends on the development of science curriculum. Curriculum development.

B.C. secondary science education.

Its rationale, philosophy, and goals; its content, learning approaches, and learning outcomes; critical analyses of secondary school science curricula in B.C.

Teaching and learning science.

The relationship between science and teaching science, teaching models and strategies, learning science from the urban environment, learning science through living materials, application of what is learned in the course to micro teaching.

Research in science instruction.

The teacher as researcher, what does research say about teaching, lesson and unit planning for teaching science.

Evaluation and science teaching.

Assessing science learning in students; assessing instructional effectiveness.

Global perspective in science education.

Global perspective in designing and learning natural sciences at the secondary school level - comparative study (Canada, U.S.A., U.S.S.R., Japan, and Israel).

Norms

Each evening will be comprised of a balance between hands on activities, discussion of readings, presentations and exchange of ideas on how materials work in practice. Students will be expected to read widely and come to class prepared to discuss what they have read. Each is expected to make a presentation on a teaching approach or an idea that has been tried in class. It is also hoped that each student will select one question in science or science teaching to examine in an informal way during the semester. (I am prepared to visit classrooms on a limited basis as time permits, if some of you would like me to do so.)

READINGS

Reading materials (for which a small fee will be charged) will be distributed throughout the course. A subset of these readings can be obtained from the instructor of the course or the Faculty of Education at the beginning of the semester. In addition, we will also use the Secondary Science curriculum guides and Science Council of Canada Report, 36 : Science for every student. Textbook might be requested later for the course. Guest speakers will be invited and films will be shown.

Requirements

Students will be expected to attend regularly, read extensively, and participate actively throughout the course. A course requirements, students will be asked to prepare a minor two to three page think paper which focuses on research in science teaching as well as a final paper or project and an interview.