SIMON FRASER UNIVERSITY

EDUCATION 476-4

DESIGNS FOR LEARNING: NATURAL SCIENCES

Spring Semester, 1990
Wednesday, 4:30 - 8:20 p.m.
Location: MPX 7500

Instructor: Dr. Abour Cherif

Pre-requisite: Educ 401/402 or equivalent.

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 pre-college 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?

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.

B.C. Elementary Science curriculum.
Its rationale, philosophy, and goals; its content, learning approaches, and learning outcomes; critical analyses of 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.

Teaching Approach

A multi-teaching approach that allows for full student-teacher involvement in teaching-learning situation and aims at worthwhile knowledge, skills, and understanding will be used throughout the course. Films and guest speakers will be used to illustrate topics being discussed in the classroom or assigned as reading. They should clarify many points and provide additional material for discussion.

Norms

Each evening will be comprised of a balance between discussion of readings, exchange of ideas, hands on activities, micro teaching, etc. Students will be expected to read widely and come to class prepared to discuss and to practice what they have read and learned.

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 Elementary Science Curriculum Guide 1-7 and Science for Children: A Book For Teachers (required text).

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 three to five pages think paper which focuses on research in science teaching as well as a final paper or project. They also will be asked to teach in micro-environment.

References

For the students who wish to do pre-reading, the following references are recommended.

Holborn, P., Wideen, M., & Andrews, I. (1988). Becoming a Teacher. Toronto: Kagan and Woo Limited.

Jacobson, W.J., & Bergman, A.B. (1987). Science For Children: A Book for Teachers. New Jersey: Prentice-Hall, Inc.

Mays, Pamela. (1985). Teaching Children Through Environment. London: Hodder & Stoughton.

Row, Mary Budd. Teaching Science as Continuous Inquiry. McGraw Hill.

Wassermann, S., & Ivany, J.W.S. (1988). Teaching Elementary Science. New York: Harper & Row Publishers.