

DAY

EDUCATION 476-4

Designs for Learning: Natural Sciences

SUMMER SESSION, 1995

W. Lim

PREREQUISITE: EDUC 401/2

OBJECTIVES:

- to provide a conceptual framework for making sense of curriculum and instruction in Elementary and Junior Secondary Science
- to provide an introduction to thinking about science teaching, development of practical skills, and fostering of positive attitude to teach science
- to become aware of the theories of science teaching and to understand their implications in practice
- to focus on hands-on, minds-on learning about science, sciencing, and science teaching by:
 - developing curriculum plans and science kits;
 - microteaching;
 - readings;
 - discussing in small and whole groups to make meaning of learning experiences;
 - participating in hands-on, minds-on class investigations;
 - completing all course assignments;
 - ongoing personal reflection;
 - committing to a personal action plan to implement a hands-on, minds-on science program
- to create an opportunity for collaborative planning and sharing
- to employ a variety of teaching strategies to facilitate meaning making of big ideas in the major areas of science: biological, physical, earth/space, technology
- to reflect in the course's format/structure, content and teaching methodologies a possible design for "putting theory into practice"

OUTLINE OF TOPICS FOR DISCUSSION AND ASSIGNMENTS

- What is science, and why should it be taught anyway?
- Using philosophy of science to develop a sound conception of the scientific process.
- What is the "scientific method"?

P.T.O.

- Are scientists "open-minded" and objective?
- What makes an experiment an experiment?
- What is the current status of science in B. C.? What programs and materials are available?
- How can we interpret what students say and do in the science classroom?
- How do young children think about particular scientific concepts? What is the nature of learning?
- Setting realistic and defensible objectives. Designing, implementing, and modifying your own science program.
- Role of parents and community in science and technology.
- Arguing for the defensibility of your own science program. Knowing who you are and articulating your beliefs about what you value in science education.
- Constructing your own science curriculum materials.
- Analysing and improving your own science teaching.
- Familiarizing yourself with the research on science learning.
- Making decisions about resourcing science experiences.

EXPECTATIONS

- punctuality and daily attendance
- completion of all assignments and submitted on scheduled due date at the beginning of class (8:30 a.m.)
- active and constructive participation in all course activities and assignments

COURSE ASSIGNMENTS AND EVALUATION

Your final course mark will be based on three course assignments [(1) Curriculum Plan; (2) Kit Creation & Microteaching; (3) Action Plan For Science Education] and your participation.

REQUIRED TEXT

Beichner, Robert & Dobey, Daniel. (1944). *Essentials of Classroom Teaching: Elementary Science*. Boston: Allyn And Bacon. ISBN 0-205-14579-5.

Hemmerich, Lim & Nell. (1994). *Prime Time: Strategies for Lifelong Learning in Mathematics and Science in the Middle and High School Years*. Ontario: Pembroke. ISBN 1-55138-041-2.

RECOMMENDED TEXT

Wassermann, S., & Ivany, G. (1988). *Teaching Elementary Science: Who's Afraid of Spiders?*