

College of Charleston
SMFT 697, Science Teaching Seminar for Scientists
Spring, 2003

2 Credit Hours (total of 30 contact hours)

Meeting Time and Place:

Location: TBA

Instructors' Names:	Meta Van Sickle, Carol Tempel George Tempel
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Course Prerequisites:	SMFT 697 Constructivist Science Teaching or EDEE 670
Course Description:	SMFT 697 is designed for practicing teachers working in a partnership with scientists. Study of methods and materials for teaching science through inquiry and constructivist tactics is the primary intent. Inquiry teaching that utilizes questioning, cooperative grouping, critical thinking, and process skills are

	integrated across the disciplines to create constructivist lessons that meet individual and group needs. Social and cultural awareness is included through discussion that focuses on the educational psychology work of Piaget and Vygotski.
Course Text/Materials:	Packet and <u>The tact of teaching</u> by Max van Manen

Course Objectives:

1. Gain the ability to plan an inquiry-based science program for public school students:
 - A. select science content and adapt and design curricula to meet the interests, knowledge, understanding, abilities and experiences of the students
 - B. select teaching and assessment strategies that support the development of student understanding and nurture a community of science learners
 - C. work together as colleagues within and across disciplines and grade levels.

2. Guide and facilitate learning:
 - A. focus and support inquiries while interacting with students
 - B. orchestrate discourse among students about scientific ideas
 - C. challenge students to accept and share responsibility for their own learning
 - D. recognize and respond to student diversity and encourage all students to participate fully in science learning
 - E. encourage and model the skills of scientific inquiry, as well as the curiosity, openness to new ideas and data, and skepticism that characterize science.
 - F. Engage in the ongoing assessment of your own teaching and of the students' learning:
 - G. use multiple methods and systematically gather data about student understanding and ability
 - H. analyze assessment data to guide teaching
 - I. guide students in self-assessment
 - J. use student data, observations of teaching, and interactions with colleagues to reflect on and improve your teaching practice

- K. use student data, observations of teaching, and interactions with colleagues to report student achievement and opportunities to teach students, teachers, parents, policy makers, and the general public
 - L. know the naïve theories and misconceptions most children have about scientific and technological phenomena and help children build understanding.
3. Design and manage learning environments for learning science that provide students with the time, space, and resources needed:
- A. structure the time available so that students are able to engage in extended investigations
 - B. create a setting for student work that is flexible and supportive of science inquiry
 - C. ensure a safe working environment
 - D. make the available science tools, materials, media, and technological resources accessible to students.
 - E. identify and use resources outside the school.
 - F. engage students in designing the learning environment.
 - G. Develop communities of science learners that reflect the intellectual rigor of scientific inquiry and the attitudes and social values conducive to science learning:
 - H. display and demand respect for the diverse ideas, skills, and experiences of all students
 - I. enable students to have a significant voice in decisions about the content and context of their work and require students to take responsibility for the learning of all members of the community
 - J. nurture collaboration among students
 - K. structure and facilitate ongoing formal and informal discussion based on a shared understanding of the rules of scientific discourse, and
 - L. model and emphasize the skills, attitudes, and values of scientific inquiry.

Course Requirements: Description of Projects/Assignments:

List all course requirements and give a description of each, and specific descriptions of all assignments.

Lesson Plans

You will be writing a minimum of 4 lesson plans using the formats described in the Fall SMFT 697 course. The four lessons will form the basis of a mini unit that uses the information from your science partner and addresses the SC Science Standards. The plans must follow the specified formats and include content notes for the teacher. (School of Education (SOE) Std I, II, III, IV, VI, VII)

Recording of a Lesson

You will video tape a minimum of 2 of the lessons that you and your teacher partner co-taught from the lesson plans (mini unit) that you created. You will bring these tapes to the seminar on the assigned dates. (SOE Std1, II, III, IV)

Evaluation of a Lesson

The class members and the course instructors will evaluate the video taped lessons based on the reading that was required for the week. We will develop a rubric of behaviors to observe from the reading. (SOE Std V)

Class Attendance and Participation

Each student is to attend class regularly and on time. It is imperative that you participate in large and small group discussion and activities. Because the method(s) of teaching that you will be learning are significantly different from methods that you have learned in other courses your **participation is mandatory**. I record your attendance and participation after each session. **You can lose up to two letter grades by failing to attend and participate.** (SOE Std I, II, III, IV, V, VI)

Evaluation Scale:

A= 93-100

B+ = 88-92

B = 83-87

C+ = 78-82

C = 74-77

F = 70

Evaluation Criteria:

(Include all activities that have a direct impact on the final grade)

Lesson Plans

Writing Lesson Plans 25%

Recording of a Lesson 25%

Evaluation of Video Lesson 25%

Class Attendance and Participation 25%

You can lose up to two letter grades by failing to attend and participate. You cannot learn to do this form of evaluation on your own and the feedback from every member of the group is required to improve your teaching to the greatest extent.

Resource Reading List:

Benchmarks

NSES

Atlas

Foundations

Attendance Policies:

Absences are not encouraged. If you must miss make sure to gain the instructors approval. You must view the videotape of the week with your teacher partner and present your results when you return. Emergencies must be reported as soon as possible. We follow the College of Charleston policy manual.

Any special consideration/agreements:

You will be assigned a teacher partner to work with for the duration of this course. You are to spend 15 hours a week with the teacher in the development of your materials. You and your teacher partner must attend the seminar together when it is your week to show your video.

Honor System:

We will follow the College of Charleston policy manual.

Performance Data:

All course requirements are performance based.

Course Calendar: (list the date and specific topic and assignments for each course meeting)

Date	Topic	Assignment
Week 1	“Developing an Assessment Plan to Learn about Student Learning” “A Learning Cycle Approach to Dealing with Pseudoscience Beliefs of Prospective Elementary Teachers”	Discuss article, Develop mini unit, Develop video review rubric from article
Week 2	Library Searches	Find one article for each of the remaining weeks. The

		article you find must be on the same topic as assigned reading for the week.
Week 3	“Students as Scientists: Using Interactive Technologies and Collaborative Inquiry in an Environmental Science Project for Teachers and Their Students”	Discuss article, Develop mini unit, Develop video review rubric from article
Week 4	“Constructivism in the Classroom: Theory into Practice”	Discuss article, Develop video review rubric from article Review video tape
Week 5	“Teachers as Inquiry Learners”	Discuss article, Develop video review rubric from article Review video tape
Week 6	“How to Engage Students in Learning”	Discuss article, Develop video review rubric from article Review video tape
Week 7	“Bad Science and Its Social Implications”	Discuss article, Develop video review rubric from article Review video tape
Week 8	Effects of Inquiry-based Teacher Practices on Science Excellence and Equity”	Discuss article, Develop video review rubric from article Review video tape
Week 9	“Humanizing Science”	Discuss article, Develop video review rubric from article Review video tape
Week 10	<u>The Tact of Teaching</u>	Discuss article, Develop video review rubric from article Review video tape
Week 11	<u>The Tact of Teaching</u>	Discuss article, Develop video review rubric from article Review video tape
Week 12	<u>The Tact of Teaching</u>	Post mini units and short video clips of the teaching to the NSF Website
Week 13	“Students Perceptions of	Post mini units and short

	Tentativeness in Science: Development, Use, and Sources of Change”	video clips of the teaching to the NSF Website
Week 14	<u>The Tact of Teaching</u>	Post mini units and short video clips of the teaching to the NSF Website
Week 15	<u>The Tact of Teaching</u>	Post mini units and short video clips of the teaching to the NSF Website