

Education 528

Teaching Science and Health in the Elementary Grades

Mike Taber
389-6026 (office)
mike.taber@coloradocollege.edu
Office hours: by appointment

Mission of the Education Department

The Education Department complements Colorado College's expressed mission in that its goal is to provide the finest educational studies possible within the liberal arts tradition. We challenge students to "develop those habits of intellect and imagination that will prepare them for learning and leadership throughout their lives."

Education Department Core Values

As members of the Colorado College community and Education Department, we are committed to:

- 1) Honor the life of the mind as central focus of our common endeavor; specifically, we hope to contribute to the development of individuals who are able to engage in critical thinking about the issues and complexities of educational subjects.
- 2) Value all persons and seek to learn from them their diverse experiences and perspectives; specifically, we expect to promote an environment in which students engage in inquiry, are open to diverse perspectives, consider evidence as the bases of determining individual outlooks, and appreciate that alternative approaches to solving problems may offer value.
- 3) Practice intellectual honesty and live with integrity; specifically, we expect students to pursue their studies with scholarly, conscientious, and ethical effort.
- 4) Encourage engagement and social responsibility; specifically, we hope that our students will contribute to the educational "life" of whatever community in which they live.

Course Overview and Goals

Essential Questions

What are Science and Inquiry?

What constitutes good elementary science curriculum and planning?

What strategies can be utilized for integrating science with language literacy, mathematics, health and social studies?

In light of our core values, we will *critically explore* these three questions in this class. Each day, you will be asked to examine literature related to effective science teaching, critically analyze elementary science curriculum, and develop clinical experiences that improve your understanding of teaching in the elementary grades.

Teaching for conceptual understanding is a complex and difficult task. Teaching requires more than a having an adequate understanding of science concepts or knowing a few reliable instructional activities. Likewise, effective teaching requires

more than just being “good” with kids. Therefore, this course is designed so that you begin to construct your own framework for effective science/health teaching based on current research, classroom practice, and your own personal experiences.

Goals for this course are:

- 1) Students will demonstrate an understanding of the importance of researched-based instructional strategies and Colorado Content Standards, and incorporate them into their teaching,
- 2) Students will demonstrate an accurate understanding of learning/learning styles and use this knowledge to guide their teaching, and
- 3) Students will accurately assess and evaluate their own teaching. The course is designed to facilitate achievement and assessment of these goals.

Course Information

The elementary teaching program at Colorado College strives to provide pre-service teachers with meaningful learning experiences that effectively combine educational theory, pedagogy, and classroom practice. In order to fulfill this goal, the elementary science method course is made up of two vital components: 1) a formal course experience, and 2) a practicum experience. Such a course configuration provides you with not only the "theory of teaching," but the "practice" as well.

The methods course emphasizes educational theory, researched-based pedagogy, and instructional strategies. Research shows that teaching is more than telling and learning for conceptual understanding is more than rote memorization. Consequently, this course will model research-based pedagogy and instructional practices and require you to critically analyze, reflect, and discuss what you observed and experienced. Once you become familiar with effective pedagogy and instructional approaches, you will apply these ideas and concepts to your practicum teaching experiences. “Application” will be assessed in the form of reflections, discussions, and classroom teaching in your practicum. Please note that the intent of this course is NOT to give you an extensive repertoire of Beakman’s World demos or Mr. Wizard science tricks. Instead, the intent is to provide meaningful learning experiences that allow you to construct a sound research-based framework that will enhance your teaching and further your pedagogical learning. NEVER worry about an assignment, *ask*.

Practicum Experience

The practicum experience specifically addresses our fourth core value. The practicum augments and enriches the elementary teaching methods course by providing an experiential base from which you can draw. The practicum for this course involves a two-week *WhizBang Science* camp for elementary kids. You will work with a team of mentor teachers, who will provide you with guidance during the camp. You will be discussing and reviewing lesson plans with the mentor teacher prior to their implementation. Each day after the students leave, you will reflect with your mentor

team on how well the lesson was implemented. In addition, you will review instructional materials to become aware of how they may be used appropriately,

The practicum experience is a vital part of this course. You will be encouraged, challenged, and at times required to draw on your experiences in the classroom.

At the end of the practicum experience, you and your mentor teachers will be asked to complete a *Cooperative Evaluation*, which will become part of your teacher education file.

Course Readings

You do not have to purchase a textbook for this course. Instead, texts from the education library and pertinent journal articles will be used. Readings will be carefully chosen so that concepts and topics in science/health education are presented in a clear and in-depth manner. Readings will be assigned on a regular basis. Discussion on the readings generally follows the next day – be prepared!

You are strongly encouraged to join the National Science Teachers Association (NSTA.org) and Colorado Association of Science Teachers (CAST). Joining is very inexpensive as a student and the pay off is immense!

Absenteeism

Our society, indeed the entire global community, needs excellent teachers with a passion for helping children mature and succeed in a complex world. Missing a single day of class or practicum is as serious as it would be to miss a day as a classroom teacher. You are expected to be punctual and regularly attend class when scheduled. If an emergency arises, please report to me in ADVANCE of class.

Grading

Grading is based on “modified contract” ideology. Thus, you are expected to show growth in your learning and practicum experience. Completing all assignments does not necessarily translate into exceptional work, but merely meets the minimum expectations.

Due dates and additional details for assignments will be provided when such requirements are introduced.

ED528 Teaching Science and Health in the Elementary Grades Explanation of Assignments

“On my honor, I have neither given nor accepted unauthorized aid on this examination (paper, report, etc.)”.

The above statement must be written on each assignment and signed by you.

Readings, Class Assignments, and Cooperative Evaluation (20%)

Assignments are given on a daily basis, and you are expected to participate in discussion the following day. The cooperative evaluation will constitute about half of this assessment.

Science Teaching Notebook and Reflective Essays (40%)

You are expected to maintain a *science teaching* notebook during the course. We will adopt the “science notebooks” model to serve as the primary structure for entries. Contents in the journal include all relative class readings and assignments plus daily notes and reflections on your practicum experience. Journals are collected randomly. I will return journals the following day.

In addition, you have two reflective essays due: July 23 and July 31. Each essay is a two to three page, double spaced reflection on your week of teaching in *WhizBang*. The essay’s should incorporate material presented in class and in assigned readings.

Science Curriculum Module (40%)

The module assignment requires you to design a 5-day science lesson plan sequence. The science module should coincide with a potential science kit being used in your placement school, a science kit you find interesting in the Mierow House library, or a negotiated scope and sequence from the web, or one of your own design (get approval first). The science lesson plan sequence must reflect current ideas and theories on learning science at the elementary level. The lesson plan sequence must also include “concept map” for integrating science with language, math, health, and social studies literacy. Additional details regarding the module assignment will be provided during the second week of class.

This course fulfills requirements for elementary licensure in the State of Colorado.

Education 528
Teaching Science and Health in the Elementary Grades
Week 1: Preparation for WhizBang
(Subject to change)

Monday

CC Cabin "get to know you" experience with mentor teachers

HW Readings:

Learning for Use – Edelson

What is Science and How Does it Work – Derry

Tuesday

9 AM Palmer 232B

- Activity: What is on the bottom of the Cube?
- Discussion: *What is Science? What is Science not?*
- Activity: Where's all the Water?
- Discussion: What is Scientific Thinking?
- Overview of WhizBang Schedule (Discussion with WhizBang Teachers); Checklist for WhizBang (Cheryl)

1:30 PM

- Learning Cycle
- Science Notebooks
- LFU lesson design

HW: Lesson ideas for WhizBang based on proposed schedule

Wednesday

9 AM

- Continue Discussion on WhizBang with Mentors - share lesson ideas; refine materials request

1:30 PM

- Room preparation and/or material gathering

HW: Write lessons for week 1 of WhizBang

Thursday

9 AM

- Present lessons to mentor teachers
- Continue room preparation and material gathering

1:30 PM

- Discuss *Essential Features of Classroom Inquiry*
- Activity: Phases of the Moon
- What is Constructivism?

Friday

AM

- Final preparations for WhizBang

PM

- Start the Physics of Sound; kit-based science
- Integrating math, reading, and social studies into science