



**EDMS 545 Section 1**  
**Elementary Science Education**  
**CRN #28506**  
**Wednesdays**  
**8:15 am – 2:45 pm**  
**Farr Elementary School | 933 Farr Ave Escondido, CA 92026**  
**Spring 2014**

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*Conceptual Framework Theme: Engaging diverse communities through leading and learning for social justice.*

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**School of Education Mission & Vision Statement**  
*(Adopted by SOE Governance Community, January 2013)*

*Vision*

To serve the educational needs of local, regional, and global communities, the School of Education advances innovative practice and leadership by generating, embracing, and promoting equitable and creative solutions.

*Mission*

The mission of the School of Education community is to collaboratively transform education. We:

- Create community through partnerships
  - Promote and foster social justice and educational equity
  - Advance innovative, student-centered practices
  - Inspire reflective teaching and learning
  - Conduct purposeful research
  - Serve the School, College, University, and Community
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**Basic Tenets of our Conceptual Framework**

- Student centered education
  - Research and theory specific to the program field inform practice
  - Connections and links between coursework and application
  - Strong engagement between faculty and candidates
  - Co-teaching clinical practice
  - Culturally responsive pedagogy and socially just outcomes
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## COURSE DESCRIPTION

Focuses on developing an understanding of theory, methodology, and assessment of second language acquisition in integrated and inclusive elementary classrooms. *Requires participation in the public schools.*

### Course Prerequisites

Admission to Multiple Subject Program

### Purpose and Goals

The main purpose of this course is to help you become a better teacher of science while increasing your enthusiasm, interest and confidence in effective teaching methods. You will model and practice ways in which science content and science processes can be naturally integrated into all the other disciplines. There will be a special emphasis on a student centered, problem solving and interdisciplinary approach to learning. Techniques for infusing multicultural aspects of science and adapting lessons to meet individual needs will also be addressed. As a result of this experience, we hope that as an elementary teacher you will feel comfortable teaching science, teaming with teachers who are specialists in this field, and utilizing the option of integrating the ideas of science methods into the other disciplines.

### Required Texts

Teaching Science to Children An Inquiry Approach by Friedl, A. and Koontz, T. (6<sup>th</sup> Edition McGraw Hill)

*Science Framework for California Public Schools K-12.* (2004). Sacramento: California Dept. of Education.  
<http://www.cde.ca.gov/ci/cr/cf/documents/scienceframework.pdf>

*Health Education Content Standards for California Public Schools K-12.* (2008). Sacramento: California Dept. of Education. <http://www.cde.ca.gov/be/st/ss/documents/healthstandmar08.pdf>

### Optional Texts

Moon Journals by Chancer, et. al

Chemical Magic from the Grocery Store Sae, A.

Use of Discrepant Events for Teaching Science Customized text Keating, J. (Aztec Press)

### Course Objective

On completion of this course, students will be able to demonstrate the following:

1. Knowledge on strategies to integrate the California Framework and Standards and the Next Generation Science Standards (NGSS) into science;
2. Understanding strategies to integrate inquiry based science into all areas of the curriculum;
3. Awareness of the multitude of community resources available to teachers and the ways in which these resources can be used to strengthen the science program;
4. The ability to write science lesson plans and implement them into an interdisciplinary, integrated unit that is appropriate to the grade-level course content;
5. The ability to design curricula, which utilize a variety of instructional strategies and develop children's higher-level thinking skills;
6. An understanding and appreciation for the dynamic nature of the processes of science
7. Applying the Learning Cycle and Scientific Method to the learning of Science
8. Strong general understanding of science and health content knowledge
9. Apply the Learning Cycle model of instruction as it relates to teaching science in a contemporary manner.
10. Demonstrate the use of technology to enhance elementary science teaching and learning.
11. Practice strategies to include all students in science (linguistically and culturally diverse, students with disabilities and other students with special needs)
12. Understanding of science safety related to the classroom and students.

## INFUSED COMPETENCIES

### Special Education

Consistent with the intent to offer a seamless teaching credential in the College of Education, this course will demonstrate the collaborative infusion of special education competencies that reflect inclusive educational practices.

### **Authorization to Teach English Learners**

This credential program has been specifically designed to prepare teachers for the diversity of languages often encountered in California public school classrooms. The authorization to teach English learners is met through the infusion of content and experiences within the credential program, as well as additional coursework. Candidates successfully completing this program receive a credential with authorization to teach English learners. *(Approved by CCTC in SB 2042 Program Standards, August 02)*

### **Use of Technology**

This course infuses technology competencies to prepare candidates to use technologies, emphasizing their use in both teaching practice and student learning. Students are expected to demonstrate competency in the use of various forms of technology (i.e. word processing, electronic mail, Moodle, use of the Internet, and/or multimedia presentations). Specific requirements for course assignments with regard to technology are at the discretion of the instructor. Most assignments will be submitted in hard copy to the instructor, and some specific assignments will also be submitted/posted electronically on Moodle. Keep a digital copy of all assignments for use in your teaching portfolio. You must use your Moodle e-mail account for this class. The best way to contact me is by Moodle e-mail.

## **STUDENT LEARNING OUTCOMES**

### **Teacher Performance Expectation (TPE) Competencies**

The course objectives, assignments, and assessments have been aligned with the CTC standards for the Multiple Subject Credential. This course is designed to help teachers seeking a California teaching credential to develop the skills, knowledge, and attitudes necessary to assist schools and districts in implementing effective programs for all students. The successful candidate will be able to merge theory and practice in order to realize a comprehensive and extensive educational program for all students. You will be required to formally address the following TPEs in this course:

#### **TPE Primary Emphases in EDMS 545:**

- TPE 1a-Subject Specific Pedagogical Skills for MS Teaching Assignments (Science)
- TPE 5-Student Engagement

#### **TPE Secondary Emphases in EDMS 545:**

- TPE 4-Making Content Accessible
- TPE 7-Teaching English Learners
- TPE 9-Instructional Planning
- TPE 14-Educational Technology in Teaching and Learning

### **California Teacher Performance Assessment (CalTPA)**

Beginning July 1, 2008 all California credential candidates must successfully complete a state-approved system of teacher performance assessment (TPA), to be embedded in the credential program of preparation. At CSUSM this assessment system is called the CalTPA or the TPA for short.

To assist your successful completion of the TPA, a series of informational seminars are offered over the course of the program. TPA related questions and logistical concerns are to be addressed during the seminars. Your attendance to TPA seminars will greatly contribute to your success on the assessment.

Additionally, SoE classes use common pedagogical language, lesson plans (lesson designs), and unit plans (unit designs) in order to support and ensure your success on the TPA and more importantly in your credential program.

The CalTPA Candidate Handbook, TPA seminar schedule, and other TPA support materials can be found on the SoE website: <http://www.csusm.edu/education/CalTPA/ProgramMaterialsTPA.html>

## GENERAL CONSIDERATIONS

### Assessment of Professional Dispositions

Assessing a candidate's dispositions within a professional preparation program is recognition that teaching and working with learners of all ages requires not only specific content knowledge and pedagogical skills, but positive attitudes about multiple dimensions of the profession. The School of Education has identified six dispositions – social justice and equity, collaboration, critical thinking, professional ethics, reflective teaching and learning, and life-long learning—and developed an assessment rubric. For each dispositional element, there are three levels of performance - *unacceptable*, *initial target*, and *advanced target*. The description and rubric for the three levels of performance offer measurable behaviors and examples.

The assessment is designed to provide candidates with ongoing feedback for their growth in professional dispositions and includes a self-assessment by the candidate. The dispositions and rubric are presented, explained and assessed in one or more designated courses in each program as well as in clinical practice. Based upon assessment feedback candidates will compose a reflection that becomes part of the candidate's Teaching Performance Expectation portfolio. Candidates are expected to meet the level of *initial target* during the program.

### Students with Disabilities Requiring Reasonable Accommodations

Candidates with disabilities who require reasonable accommodations must be approved for services by providing appropriate and recent documentation to the Office of Disable Student Services (DSS). This office is located in Craven Hall 4300, and can be contacted by phone at (760) 750-4905, or TTY (760) 750-4909. Candidates authorized by DSS to receive reasonable accommodations should meet with their instructor during office hours or, in order to ensure confidentiality, in a more private setting.

### All University Writing Requirement

A minimum of 2500 words of writing assignments per semester is required. This will be fulfilled through a variety of ways in this course such as: reading logs, action research reports, field trip curriculum plans, discrepant event curriculum plans and independent study reports.

### CSUSM Academic Honesty Policy

"Students will be expected to adhere to standards of academic honesty and integrity, as outlined in the Student Academic Honesty Policy. All written work and oral presentation assignments must be original work. All ideas/materials that are borrowed from other sources must have appropriate references to the original sources. Any quoted material should give credit to the source and be punctuated with quotation marks.

Students are responsible for honest completion of their work including examinations. There will be no tolerance for infractions. If you believe there has been an infraction by someone in the class, please bring it to the instructor's attention. The instructor reserves the right to discipline any student for academic dishonesty in accordance with the general rules and regulations of the university. Disciplinary action may include the lowering of grades and/or the assignment of a failing grade for an exam, assignment, or the class as a whole."

Incidents of Academic Dishonesty will be reported to the Dean of Students. Sanctions at the University level may include suspension or expulsion from the University.

### Plagiarism:

As an educator, it is expected that each candidate will do his/her own work, and contribute equally to group projects and processes. Plagiarism or cheating is unacceptable under any circumstances. If you are in doubt about whether your work is paraphrased or plagiarized see the Plagiarism Prevention for Students website <http://library.csusm.edu/plagiarism/index.html>. If there are questions about academic honesty, please consult the University catalog.

### Cell Phones

Please turn off your cell phone before the start of each class. In addition, there will be no texting during class. It is unprofessional for teachers to use their cell phone during meetings with peers or during professional development activities (our class is considered professional development!). Your consideration will be appreciated by peers.

### **Person-First Language**

Use “person-first” language in all written and oral assignments and discussions (e.g., “student with autism” rather than “autistic student”). Disabilities are not persons and they do not define persons, so do not replace person-nouns with disability-nouns. Further, emphasize the person, not the disability, by putting the person-noun first.

### **Use of Technology**

Candidates are expected to demonstrate competency in the use of various forms of technology (i.e. word processing, electronic mail, Moodle, use of the Internet, and/or multimedia presentations). Specific requirements for course assignments with regard to technology are at the discretion of the instructor. Keep a digital copy of all assignments for use in your teaching portfolio. All assignments will be submitted online, and some will be submitted in hard copy as well. Details will be given in class.

### **Electronic Communication Protocol**

Electronic correspondence is a part of your professional interactions. If you need to contact the instructor, e-mail is often the easiest way to do so. It is my intention to respond to all received e-mails in a timely manner. Please be reminded that e-mail and on-line discussions are a very specific form of communication, with their own nuances and etiquette. For instance, electronic messages sent in all upper case (or lower case) letters, major typos, or slang, often communicate more than the sender originally intended. With that said, please be mindful of all e-mail and on-line discussion messages you send to your colleagues, to faculty members in the School of Education, or to persons within the greater educational community. All electronic messages should be crafted with professionalism and care.

Things to consider:

- Would I say in person what this electronic message specifically says?
- How could this message be misconstrued?
- Does this message represent my highest self?
- Am I sending this electronic message to avoid a face-to-face conversation?

In addition, if there is ever a concern with an electronic message sent to you, please talk with the author in person in order to correct any confusion.

## **COURSE REQUIREMENTS and GRADING STANDARDS**

### **Grading Policy**

Final grades for EDMS 545 will be computed as a % of the total points earned:

A = 94-

A- = 90-93 %

B = 84-89 %

B- = 80-83

C+ = 77-79

(Anything less than a C+ does not count toward a California Teaching Credential)

### **School of Education Attendance Policy**

Due to the dynamic and interactive nature of courses in the School of Education, all candidates are expected to attend all classes and participate actively. At a minimum, candidates must attend more than 80% of class time, or s/he may not receive a passing grade for the course at the discretion of the instructor. Individual instructors may adopt more stringent attendance requirements. Should the candidate have extenuating circumstances, s/he should contact the instructor as soon as possible. *(Adopted by the COE Governance Community, December, 1997).*

### **Personal Comments about Attendance:**

Prompt and consistent attendance is vital to success in this class. Attendance will be taken and class will start on time. Both attendance and punctuality are essential to completing all work satisfactorily. Only 50% of the potential value for an assignment can be credited as makeup for an assignment that is due and reviewed in a class that was not attended by the student. Two absences (in this case one full day of class =two class equivalents) in one semester can result in a minimum of one grade lower; three absences can result in a non-passing grade (unless there are extenuating circumstances). Late arrivals will be penalized at the discretion of the instructor.

## COURSE TIMELINE

### Class #1 January 22 (Wednesday)

1/22

- Read syllabus prior to attending class (what questions do you have??).
- Define Science? How were you taught Science? (Discussion)
- Introduction to Syllabus (Questions)
- Assign directors (see attached addendum)
- Intro to Science Frameworks/ Standards/Overview of Next Generation Science Standards (NGSS)
- Moon Journals,
- Science Content Topics in Text (Assign Groups)
- Field Trip/Community Resources
- Signups for various projects (DE/Moon Journals/Chapter Readings)
  
- 1/22
- Introduction to Discrepant Events: What are the critical pedagogical elements of inquiry as used in the Discrepant Event model? (Happy/Unhappy Balls)
- The Nature of Science and the Scientific Method/Learning Cycle (Loonie Goonies Simulation Game)

#### Next time:

- 1) In the California Frameworks Read Ch. 1 and 2 and your assigned Section of the Standards by grade level
- 2) Write out standards exercise (1a, b, c and d). See syllabus Descriptions of Assignment # 1 a, b, c and d. Be prepared to share this your grade level group and prepare a presentation (time given in class) per description in #1d (note addition of Health Standards 1c)
- 3) Read TSC Introduction on Science Safety and Ch. 1, 2, 3 (notes and any questions), and choose one Chapter from Ch. 4-6 (Physical Science) to read and produce one graphic organizer and (or) teaching outline to share with reading team/ colleagues (see Assignment #9) . Assign Reading groups.

### Class #2 January 29 (Wednesday)

1/29

- Must have syllabus (General Questions)/ Gradesheet printed for personal folder
- General Discussion of California Science Framework (Science Safety, Ch. 1 and Ch. 2)
- 30 minutes of team working time for Team Standards Framework presentations (#1a,b, c, d)
- Team presentation of Science Frameworks assignment (see example under description of assignments)

1/29

- Annenberg Video on using Inquiry Learning in K-6
- General Discussion of Friedl Text Introduction, Ch. 1-2 and Share graphic organizer/outline: (Ch. 4-6 Physical Science) (Assignment #7)
- Student discrepant events X 3 (pairs) (Assignment #2A/B)

#### Next Time

- 1) Choose one from TSC Ch. 7-10 Physical Science (Graphic Organizer and or outline)
- 2) Discrepant Events x3 (per schedule)

### Class #3 February 5 (Wednesday)

2/5

Student discrepant events x3 (Assignment #2A/B)  
Share Graphic Organizers Ch. 7-10 (Physical Science)

2/5

Introductions to Inquiry Based Problem Solving Model (Assignment # 6 B-D)  
"Superlinks" (OM program) (Individual Problem Solving)  
"Verbal/Non-Verbal" (Team building)  
"Invention Convention" (Applied Science)

**Next Time:**

- 1) Choose one from TSC Ch. 11—13 Physical Science and Earth Science (Graphic Organizer)
- 2) Discrepant Events (per schedule)

**Class #4 February 12 (Wednesday)**

- 2/12 Student discrepant events X 3 (Assignment #2A/B)  
Share Graphic Organizer Ch. 11-13 (Physical Science and Earth Science)
- 2/12 Maps and Compass (Interdisciplinary/Visual Curriculum) (Assignment # 4)  
Open ended vs. Closed Ended Scientific. Experiments (in class hands-on activity Assignment #6A).

**Next Time:**

- 1) Choose one from TSC Ch. 14-17 Earth Science (Graphic Organizer)
- 2) Discrepant Events (per schedule)
- 3) Moon Journal Presentations (1/2 class)

**Class #5 February 19 (Wednesday)**

- 2/19 Share Graphic Organizers Ch. 14-17 Earth Science  
Discrepant Events X 3 per schedule

- 2/19 Moon Journal Presentations (1/2 class)

**Next time:**

- 1) Share Invention Convention presentations: In teams develop an invention with associated activities (per handout) before class
- 2) (part of Assignment #6 D)
- 3) Choose one from TSC Ch. 18-21 Life Science (Graphic Organizer)
- 4) Discrepant Events per schedule

**Class #6 February 26 (Wednesday)**

- 2/26  
Share Graphic Organizers from TSC Ch. 18-21 Life Science  
Discrepant Events (per schedule) (Assignment #2A/B)

- 2/26 Invention Convention Presentations in Teams (Assignment #6 D)

**Next Time:**

Wild Animal Park Field Trip/Safari Park (#5). Details to be emailed.

**Class #7 March 5 (Wednesday)**

- 3/5\_ Meet at WAP/Safari Park at 8:45-3:00

**Next Time:**

- 1) Discrepant Event Quiz (Assignment #2 C)
- 2) Instructor evaluations
- 3) Moon Journal Presentations (1/2 class)

**Class #8 March 12 (Wednesday)**

- 1) Moon Journal Presentations (Assignment # 3 A/B)
- 2) Graphic Organizer Overview of the course
- 3) Discrepant Event Quiz (Assignment #2 C)
- 4) Instructor Evaluations

## DESCRIPTION OF SCIENCE METHODS ASSIGNMENTS

The following are assignment prompts that represent the Spirit of the Assignment. Additional information and clarification will be given in class, and the Moodle site for this course will also provide handouts and resources. Each prompt will be scored using a rubric that uses a Likert Scale: no response (0) to exceptional (maximum possible points for that assignment). Due dates are on the timeline of this syllabus.

**Note: I = Individual and T = Team**

The criteria for grading are:

- Fully addressing the prompt.
- Clear, coherent professional writing. You must demonstrate good understanding and appropriate interpretation of the topic.
- Correct spelling and grammar on final drafts.

### Assignment 1 – California Science Framework and Standards

**Spirit of the assignment:** Read a portion of the California Science Framework and the Standard(s) for a particular grade. You will write your individual response to the readings. Then you will work with your grade level team to prepare and do a presentation to the class. It's important that you do the reading and the write-ups BEFORE you meet with your team.

#### 1a. Framework summary response (I) 10 points

- Read the first part of the California Science Framework, up to page 20. This includes Board Policy, the Introduction and Chapters One and Two.
- Think about the reading holistically.
- Write about a page, in your own words, that answers these questions: What do you think are the most important ideas addressed in the reading? Were there any ideas in the reading which were very new to you, or which disagreed with something you thought?

#### 1b. Grade level Science standard response (I) - 10 points

- Read through all the standards for your assigned grade level. Using the standards for your chosen grade (K-6), pick a line item from physical science, or life science, or earth science (jigsaw so that each science content area (biology, chemistry/physics and earth science) is covered within the team). Come up with a brief description of an activity that children in that grade can do that also addresses one of the Investigation and Experimentation standards for the grade. One of many great reputable new resources that you might use is the following web site which includes award winning lessons that apply the standards in this way and also use technology:  
<http://www.nsta.org/publications/interactive/laptop/grade.htm>
- You should end up with four sections, each of which includes a content line (physical, life, or earth science), an Investigation and Experimentation line, and a one or two sentence description of an activity that combines the two describe a simple formative or summative assessment for that activity. The whole thing should be about a page
- See example next page.

#### 1c. Grade level Health Education standards response

##### Grade level Health Education Content Standards Response (I) – 5 points

[The Health Education Content Standards for California Public Schools](#) are categorized into 8 Health Content Standards: Essential Health Concepts; Analyzing Health Influences; Assessing Valid Health Info; Interpersonal Communication; Decision Making; Goal Setting; Practicing Health Enhancing Behaviors; and Health Promotion. These 8 content standards are included in 6 Health Content Areas: Nutrition and Physical Activity; Growth, Development & Sexual Health; Injury Prevention and Safety; Alcohol, Tobacco, and Other Drugs; Mental, Emotional, and Social Health; and Personal and Community Health.

For the same grade level assigned to you for Task I B, you will select one Health Content Standard under one of the Health Content Areas and write an activity that students in that grade level can do.



**1d. Team preparation and presentation (T) 5 points**

**You will be given 30-40 minutes of class time to work with your team.**

- Get together with your team (arranged by grade level K-6). Look at the activities that everyone wrote up for Assignment 2b. Choose one.
- As a team, write up a lesson plan for the activity (with objectives, assessment, a brief description of the activity and any modifications for challenged students}. Put it on chart paper or an overhead transparency so it can be easily presented to the class. Make sure you quote the line from the standard on which your lesson plan is based.
- As a team, come up with a brief overview of the Science Standards for your grade. Don't try to give us every single line of the standard. Summarize it in such a way that we see generally what students are supposed to learn in physical, earth, and life science and in investigation and experimentation in that grade.
- In 8 minutes or less, present your lesson plan and standards choices. Be prepared to explain why your lesson plan represents really good science for students.
- Your grade for this assignment will be based on the content and quality of your presentation, and on the level of collaboration of the group.

**Sample responses to Assignment 1b. and 1c.**

Grade Four

Physical Science

1.b. Students know how to build a simple compass and use it to detect magnetic effects, including the Earth's magnetic field

Investigation and Experimentation

6.f Follow a set of written instructions for a scientific investigation.

Activity

Following directions from the Internet, the students will work in partner pairs to build compasses, using paper cups, thread, a needle and a magnet. They will observe and record the action of the compass indoors and outdoors, and in proximity to various objects.

Assessment (summative): The student will be able to draw and explain how s/he built the compass and how it used and applied (a rubric will be used to assess the level of understanding).

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Life Science

2.c. Students know decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.

Investigation and Experimentation

6.c. Formulate and justify predictions based on cause-and-effect relationships.

Activity

The students will predict the growth of mold on bread that has no preservatives. They will observe and record the progress of the mold in various circumstances (if the bread is left in the open air, if the bread is in a closed sandwich bag, etc.)

Assessment (Summative): The student can construct a simple data table to illustrate the progress of growth and offer explanations for their findings comparing the different variables of growth (or inhibition)

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## Earth Science

5.c. Students know moving water erodes landforms, reshaping the land by taking it away from some places and depositing it as pebbles, sand, silt, and mud in other places (weathering, transport, and deposition).

### Investigation and Experimentation

6.b. Measure and estimate the weight, length, or volume of objects.

### Activity

In groups of four, students will create landforms (using common dirt) on cookie sheets. They will add measured amounts of water to their landforms, and will collect and measure the dirt that runs off.

Assessment (Formative): The students will form hypothesis to predict the effect of differing amounts of water on their specific landforms.

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## Health Content Area: Nutrition and Physical Activity

Health Content Standard 1.8.N - Identify ways to increase and monitor physical activity.

### Activity

In pairs, students will take turns in a jump rope activity. Starting with 5 jumps and increasing the jumps by 5, they will observe and record the maximum number of jumps that their partner can comfortably complete.

Assessment (Formative) Each student will first predict the maximum number of jumps that s/he can comfortably complete and then, in their science journals, identify factors that may influence their performance on the task.

## Assignment 2 A/B/C – Discrepant Event

**Spirit of the Assignment:** Develop and teach a particular kind of a science inquiry lesson that teaches both science thought processes and science content. You will practice your discrepant event on at least one school-age child and reflect on the child's responses and what they indicate about how much he/she understood. Working by yourself or with a partner you will actually present your discrepant event to the class and give a copy of the lesson plan to each class member. After all the discrepant events have been presented, you will take a quiz to demonstrate that you personally learned the important science concepts that were presented.

### 2a. Discrepant Event Lesson Plan and Presentation T 15 points

- Working in a team or two, find a discrepant event associated with one of the reading topics you will do in the textbook (Friedl). You can get one from the Text (Friedl) or Discrepant Events, by Keating, or go to a bookstore or the children's section of the library and look for books on Science Tricks, or Science Magic.
- Get together the materials needed for the discrepant event.
- Practice doing the event.
- Make sure you understand the science behind the event. If you got it from an Internet website, there may be background info on the site. Another good place to look: the children's section of the public library. Find children's books on the topic in addition to or even preferably to books for adults. The children's books will explain things simply and will use the appropriate vocabulary for you to use with your students. Remember, you don't have to have a college-level understanding of the topic, just have good, accurate information at your students' level.
- Do your discrepant event with at least one school-age child or a classroom group and take careful notes on the child's responses. (This ties in with Assignment 3b.)
- Fill in the discrepant event cover sheet, including the two questions.
- On your assigned day, bring in your materials and equipment and do your discrepant event for/with the class. **You are limited to 15 minutes presentation time.**
- After presenting your event, give each member of the class a copy of the lesson plan.
- Turn in your lesson plan, the cover sheet and your individual journal.

**2b. Discrepant event journal****I 10 points**

- After you have done your discrepant event with a child or children or **with the class you are assigned**, look at your notes and think about how it went. (You may realize that your event needs to be modified before you do it with the class.)
- Write a description of what happened, with special attention to what the child said and did. Analyze the child's response: what portions of the event, and to what extent, did the child understand what was happening? Why or why not?

**2c. Discrepant event quiz****I 20 points**

After all discrepant events have been presented in class; a quiz will be given on the content of the events. The quiz is based mostly on the questions submitted by each partner pair on their Discrepant Event Cover Sheet. *This quiz will be open notebook. That means you should take careful notes during each discrepant event presentation.*

**Assignment 3 A/B– Observation/art/writing (Integrating Multiple Disciplines with Science)**

**The spirit of this assignment:** observe something using all your senses, then use what you have observed to do a writing and an art activity from the book Moon Journals. You can use any kind of an experience for this: a walk on the beach, playing basketball, bathing a baby. Immediate experience is very important, so even if it's something you've done many times before, do it again for this assignment. **DON'T DO IT FROM MEMORY.**

**3a. Observation****I 5 points**

- A. Sign up for a particular day, from 1 to 28 in the Moon Journals book. Look at the Art Invitation and the Writing Invitation for your particular day. If you didn't buy the book, borrow it from the Moon Journals director or use one of the copies and copy the relevant pages.
- B. Observation is a critical part of science and teaching science to children. To that end observe a natural event and take notes. Try to identify at least three specific details for each sense. Your notes can be in any format, and can be handwritten, as long as they are legible. If there is one sense that can't be used for your observation, give the reason why. You will turn in your notes with the art and writing pieces.

**3b. Art and Writing Integrated into Science****I 15 points**

- A. Follow the directions in the Moon Journals book for the writing and art activities for your assigned day. Apply the specifics of your observations and connect them to your observation for assignment 5a. As creatively as you can. If either the writing or the art won't work, see the instructor. As an alternative to this have a child apply an observation to the art and writing and present that as your artifact.
- B. Look in the Timeline for Art/Writing. On that day, bring your Science Observations and related response to the Art and Writing Invitations to class.
- C. REMEMBER—YOU ARE NOT GOING TO DO YOUR WRITING AND ART ABOUT THE MOON. YOU ARE GOING TO USE WHAT YOU OBSERVED, WHETHER IT'S WALKING ON THE BEACH OR BATHING A BABY.

**Assignment # 4 - Model of Interdisciplinary Science Teaching that incorporates authentic assessment (Map and Compass)**

**Spirit of the Assignment:** Students will learn how to read topographic maps and use a compass to find directions. By doing this activity, you will apply elements of geology, mathematics and geography. Specifics to be discussed in class **10 Pts.** (Done in class)

**Assignment #5 Using Field Trips in Science (WAP Field Trip)**

**Spirit of the assignment:** *by attending this field trip students will understand: 1) general procedures for planning an implementing a field trip in science; 2) how to access and use resources provided by a site prior to going; 3) Pre, during and post lesson plans to apply an inquiry based animal observation study using. 4) Independent/teacher choice field trip experience.* Details of the field trip overview and requirements will be presented in class. (15 pts.)

### **Assignment #6 (A – D): Inquiry-Based Problem Solving/Teaching Model**

**Spirit of the Assignment:** Four different examples of applying inquiry in an Elementary Classroom. Reinforces the Discrepant Event Model (30 Pts)

- A. Open Ended Science Experiments (“Paper Towel Experiment”) Applying the Scientific Method/Learning Cycle - 10pts
- B. Odyssey of the Mind: “Superlinks” (Individual Problem Solving/Competitive-Non-Competitive Model) - 5 pts
- C. “Verbal Non-Verbal” (Group Problem Solving) - 5 pts
- D. “Invention Convention” (Applied Inquiry) - 10 pts

### **Assignment #7 Applying Readings to the Understanding of Science Topics/ Content for K-6 Teachers (Book Report Groups)**

**Spirit of the Assignment:** Gain a basic understanding of the major scientific concepts taught in K-6 from Earth Science, Biology, Chemistry and Physics. Each week students will read one of the three or four topic areas (Chapters) of science content and pedagogy assigned that week from Friedl/Koontz.

- 1) They will formulate a graphic organizer and or outline (as a handout) to assist in explaining the major concepts, critical vocabulary and examples of DE/Demonstrations that apply.
- 2) They will meet with their group to jigsaw each of the assigned chapters.
- 3) In a general class discussion they will pose any additional questions or issues related to the topics discussed.
- 4) The Discrepant Events for that class period will attempt to be coordinated with the topics of that day so they are representative (10 pts each X 5 = **50 pts**)

### **Assignment #8 Participation in all aspects of class work**

**Spirit of the Assignment:** Participation in each class through discussions, questioning and group involvement (10 pts).

### **EXTRA CREDIT**

All students can gain extra credit for certain in-class and out-of-class activities. *There is a cap of 10 points total that can be applied to your grade. Three are provided below.*

- Apply your Discrepant Event with the class you are tutoring/teaching (5 pts.)
- **Read a scientific articles** concerning science or science education and write a one-page reaction paper on each article. Articles must be a relatively current publication date. They can be from scholarly journals, or ERIC, from the Internet, from the newspaper, or from general interest publications. Please make sure to include the Author, Title, Publication Name, and Date of Publication.  
2 points per article (maximum two articles)
- **Watch a television show or movie** that deals with science or science education and write a one-page reaction paper. (Maximum **two reports** (2 points per report)
- **Be a director**, according to the list below. 5 points

### List of Potential Classroom Directors

Director of Directors – Assigns Directorships – keeps list

Classroom note-taker: organizes succinct summary of major ideas of each class and distributes electronically

Discrepant Event Coordinator/Moon Journal Coordinator,/ California Frameworks Coordinator

Technology coordinator—assists with use of smart classroom to facilitate student presentations

Timer ...Keeps student presentations on time

Assignment Folder coordinator---collects and hands out grade folders and papers before and after class

Environmental coordinator---makes sure classroom environment is appropriate both before and after class

Name Tag Director – Make sure everybody has a name tag each class

Contact Information Director—Make class list with current contact info including emails/phone numbers

Assignment coordinator—sends out weekly reminders of assignments due and clarification with instructor if needed

Photographer – takes photos of students (for folders) and various class activities. Shows them to class.

Science Education researcher– Find science/science education websites and news articles that are relevant and present to class

Field Trip Coordinator—Helps with arrangements to the WAP

Science Methods Text Topic Area Assignments

Other (you choose depending on your expertise and needs of the class)

**Addendum A Grade Sheet (Please copy and bring to class for folder)**

Gradesheet – EDMS 545      Name \_\_\_\_\_

**Attendance: (10 pts per class= 80 pts in all)**

#1	#2	#3	#4
#5	#6	#7	#8

**Assignments:**

1a. Framework Write-up	I	_____/10
1b. Science Standard Write-up	I	_____/10
1c. Framework/Standards Team Presentation	T	_____/5
1d. Health Standard Write-up	I	_____/5
2a. Discrepant Event Lesson Plan and Presentation	T	_____/15
2b. Journal—Doing your discrepant event with a child	I	_____/10
2c. Discrepant Event Quiz – Open notebooks	I	_____/20
3a. Observation of natural event (Connected to Moon Journals)	I	_____/10
3b. Art/Writing (Moon Journals)	I	_____/20
4. Map and Compass (Integrated. Learning)	I	_____/10
5. Using Field Trips/community in Science (WAP)	T	_____/15
6. Problem Solving (OM/ IC/ Open ended: Towels/Probeware)	I or T	_____/30
7. Assigned Reading Topic from Friedl TSC (5 X)	I/T	_____/50
8. Participation Credit (Discussion/presentations/etc.)	I	_____/10

Additions \_\_\_\_\_/10 pt (max)

Total \_\_\_\_\_/300

## Addendum B Evaluation of Discrepant Event Presentation

(Copy and bring to class to use with each presentation)

Name: \_\_\_\_\_

1. Is the handout clear and inclusive of all necessary information? \_\_\_\_\_/3  
Does it reference any other books or materials from which ideas were gathered?

2. In the presentation and explanation does the teacher appear to have a good grasp of the underlying scientific principles? \_\_\_\_\_/3

Is the major scientific concept clearly explained?

3. Does the discussion/demonstration with the class utilize \_\_\_\_\_/3

- good inquiry methods (probing, non-judgmental, student-centered, closure)
- generate student enthusiasm
- take a constructivist approach

4. Is the discrepant event appropriate for linguistically diverse students? \_\_\_\_\_/3

5. What is the overall effectiveness of the presentation? \_\_\_\_\_/3

Total \_\_\_\_\_/15