YouthTEACH2learn
Science Curriculum
Guide
**Introduction**

The YouthTEACH2Learn Program is a one-year career exploration course for high school juniors and seniors. Participating students who complete the course requirements receive 3-units of college credit from California State University, Fullerton.

During the course, students are expected to develop and teach six standards-based science lessons to elementary school students, explore teaching and science careers through 20 hours of community service and learn about pursuing teaching careers through campus visits and panel discussions.

Katie Fliegler and Laurie Smith developed the materials for the Teacher’s Guide and corresponding Student Portfolio.

**Contact Information**

**National Offices**

**Project Tomorrow**
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Irvine, Ca 92618  
949 609-4660

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Director of Research and Evaluation  
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Consulting High School Advisor - Trabuco Hill High School  
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**Higher Education Partner**

**California State University, Fullerton**
P. O. Box 6848  
Room 583  
Fullerton, CA 92834-6848

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Advisor, Teacher Education  
(657)278-3815  
mdalessi@exchange.fullerton.edu
Implementation Considerations

Site Considerations

Course Description

- During this one-year course high school juniors and seniors will:

- Learn basic strategies for teaching elementary school students
- Learn the CA State Science Standards
- Learn the district science curriculum
- Meet with elementary school teacher to learn about class.
- Participate in at least one classroom observation in elementary school.
- Develop and teach six science lessons aligned to state and district standards to elementary school students. Students should teach the lesson at least twice. After the first lesson, they debrief, make adjustments or enhancements and then re-teach the lesson to another group of elementary school students.
- Participate in 20 hrs of community service related to science (e.g. family science nights, community science nights at local Orange County venues, or various volunteer opportunities).
- Participate in half-day Career in Teaching Conference and year-end recognition event.
- Network with peers countywide via videoconference, online chats, or threaded discussions.
- Participate in project-related surveys and focus groups.

Scheduling Considerations

- One year course: May be daily 50 minute course or block schedule
- Select a minimum of two, maximum of six elementary schools to participate.
- Students will be offsite during the year to teach classes (the number of classroom visits is dependent upon the number of participating elementary schools).
- Recommended team configuration: Gr. K-3 teams should be 3-4 docents and Gr. 4-6 teams should be 2-3 docents. Typically, a high school docent team can serve a maximum of 8 elementary school classes.
- Work with district coordinator and elementary school principals to select targeted grade level (for example, 4th and 5th) that the high school students will work with.
- Work with high school teachers to secure buy-in for students to leave classes.

Requirements

- Upon selection, the participating school and/or school district must agree to provide the following in-kind support to the program:

- High school science teacher for one class period.
- Release time for high school science teacher to attend professional development sessions, program meetings and observe docents teaching class at least twice.
- Release time for elementary school coordinating teachers to attend planning sessions and recognition event.
- Administrative support for the program at the district, high school and elementary school(s).
• Access to students and teachers for evaluation purposes.
Job Responsibilities – Participating Schools

YouthTEACH2Learn Program Teacher (High School Staff position)
High School staff member will be responsible for teaching high school course during the school year. Responsibilities include working with Project Tomorrow Program staff, as well as district and elementary school personnel to:

- Facilitate classroom instruction
- Observe docents during teaching lessons at least twice during the school year.
- Establish relationships with appropriate personnel from participating elementary schools and community organizations.
- Facilitate access to high school students, as appropriate.
- Participate in professional development and networking opportunities (stipends and/or sub-costs will be underwritten by Project Tomorrow – estimated at 16 hours).
- Facilitate classroom visits between school sites and Project Tomorrow guests (e.g. board members, potential and/or current donors).
- Participate in all pre and post surveys conducted by Project Tomorrow. Provide Project Tomorrow access to student achievement data, docent course work and attendance records for evaluation purposes, as appropriate.
- Participate in networking sessions and status meetings hosted by Project Tomorrow.
- Participate in Fall Orientation and Spring recognition event(s).
- Presentations at conferences, as appropriate.

YouthTEACH2Learn Coordinating Teacher (Elementary school staff position)
Elementary School staff member will be responsible for hosting high school students in their classroom during the school year. Responsibilities include working with appropriate personnel to:

- Host high school science students in the classroom.
- Observe students’ lessons and provide feedback.
- Work with high school Program Teacher to insure teaching experience is meaningful for student.
- Participate in professional development and networking opportunities (stipends and/or sub-costs will be underwritten by Project Tomorrow – estimated at 16 hours).
- Host classroom visits for Project Tomorrow guests (e.g. board members, potential and/or current donors), as appropriate.
- Participate in all pre and post surveys conducted by Project Tomorrow. Provide Project Tomorrow access to student achievement and attendance records for evaluation purposes, as appropriate.
- Participate in Fall Orientation and Spring recognition event(s).
YouthTEACH2Learn Program
Job Responsibilities

Job Responsibilities – Project Tomorrow Staff

YouthTEACH2Learn Program Coordinator
Responsibilities include working with staff from participating schools and community organizations to:

- Provide participating teachers and students access to online resources, including: Science Docent High School Curriculum, online Lesson Plan Repository, program website, and communications/networking tools.
- Serve as resource for day-to-day operations.
- Work with High School Advisor to procure the appropriate supplies.
- Plan and coordinate student-teaching assignments.
- Coordinate docent lesson evaluations.
- Promote community service opportunities to High School Program Teachers and students.
- Register high school students with Cal State Fullerton to secure college credit.
- Collect data for program evaluation including: pre and post surveys, student achievement and enrollment information.
- Arrange networking meetings, teaching career seminar, field trips to local college campuses, spring recruitment, year-end celebration.
- Administer Student Scholarship Program.

Director, Research & Evaluation
Responsibilities include working with the high school Program Teacher and/or Elementary School Coordinating teachers to:

- Develop high school curriculum, recruitment, orientations, college enrichment programs, community service opportunities, college scholarship program, internal procedures and policies, program documentation and evaluation.
- Promote YouthTEACH2Learn Program in participating schools and the community through effective public relations activities.
- Recruit participants to YouthTEACH2Learn Program.
- Develop ways for college faculty, retired professionals and college education students to be involved with YouthTEACH2Learn students (i.e. tutoring, joint projects, collaborative assignments).
- Work with YouthTEACH2Learn program committees (working and advisory), representatives from cooperating colleges, community members, High School Program teachers, and school and district administration to refine and implement YouthTEACH2Learn Program.
- Work with local colleges/universities and organizations to ensure that YouthTEACH2Learn students who pursue teaching have the support they need to succeed.
- Serve as liaison to participating colleges.
- Analyze program data and write evaluation reports for designated stakeholders.
- Work with CEO and Development Manager as appropriate to secure funds for program.
- Participate in interviews for program staff.
YouthTEACH2Learn Program
Job Responsibilities

- Develop and oversee program budget.
- Develop strategy for national expansion.
- High school teacher with experience in science, scientific inquiry, teacher training/mentor (if funding secured through ROP must have a minimum of 3 years teaching experience)
- Comfortable using technology.
- Time to participate in professional development and network opportunities during school year.
- Willingness to participate in pilot program.

To learn more and/or to have your school considered for participation, please contact: Laurie Smith, Director Research & Evaluation, at lsmith@tomorrow.org or 949 609-4660 ext 17.
Setting Up your Class

Updating course materials

- Review and update all student orientation forms (see section 2) to meet your specific program guidelines.
- Update CSU Course Syllabus to align with program guidelines.
- Customize the following documents, as required
  - Update the contact info document with the current contact information (contact info.doc)
  - Update lesson evaluation form with your contact information (lesson evaluation.doc)
  - If you are creating electronic portfolios update the document assignment_portfolio.doc with the guidelines rules for archiving documents on school server.
  - Update Assignment_teaching Lessons document based on meeting with participating principal(s) and teacher(s).

College Credit through Cal State University, Fullerton (3 units)

- The YouthTEACH2Learn Program has been approved as part of EDSC 110: The Teaching Experience: Exploration at Cal State Fullerton. See the CSUF Course Syllabus – page __.

  Catalog Description: Exploration of one’s self in relation to other people in the schools and an encounter with the teaching experience through fieldwork. Accompanying seminar to help students extend their observations and explore relevant issues.

  High School Advisors receive a stipend from Cal State Fullerton for participating in the program. The CSUF application form and your current resume must be submitted to CSUF in a timely fashion in order to process the appropriate contracts and paperwork.

- In order for students to secure 3 units of college credit, High School Advisors must submit all complete CSUF Student Registration forms, Student Summary and Demographic Summary forms to CSUF no later than Monday, Sept 7th at 5:00pm. This deadline is determined by the CSUF calendar. All college fees have been waived. The college units are transferable to other institutions.

Recruiting participation from Elementary Schools

- Meet with principal at elementary school to introduce the benefits of the program. It is important to discuss how the YouthTEACH2Learn program will support the school’s efforts to teach science as well help the high school students develop their interest in teaching.

- Determine the number of elementary school teachers that should be participating in the program. This will be dependent upon: 1). The number of high school students who are participating in the program, and 2). How you chose to group the elementary school science standards and structure the lessons. High School students are typically grouped in teams of 3-4 students and each team is expected to teach their lesson twice to different elementary school students.

- Identify targeted grade level and potential teachers who may be interested in serving as cooperating teachers by hosting docents in their classrooms (review curriculum matrix, and standards).

- Meet with elementary school teachers to discuss program benefits, expectations and timeline (student observations, teaching assignments, lesson evaluation, pre and post surveys).

Building Support for the program
To ensure a meaningful experience for both the high school and elementary school students it is important for the high school advisor to develop strong working relationships with both the principal and cooperating elementary school teachers. The high school students can support the efforts at the elementary school by teaching lessons that align to the science curriculum, and the elementary school teachers can support the docents by providing meaningful feedback about their lessons and teaching strategies.

Depending on the program configuration at your school site the high school docents may need to be excused from their other courses during the teaching assignments.

Make it easy for the elementary school principal and teacher to participate.

Be empathic. Remember elementary school teachers are responsible for their students learning and science is a small piece of the entire curriculum. Their primary focus is completing grade level content standards in all subject areas.

Developing Science Lessons -- Curriculum Considerations and Ordering Materials

Align lessons to State Science Standards, as well as the district pacing guide for K-6 science instruction.

When preparing the lessons, materials can be ordered from Project Tomorrow by returning the completed Materials Order Form to our offices via fax or e-mail. The Materials Order Form can be found in the Teacher Guide (see Student Orientation, section 7), or can be requested via e-mail from docents@tomorrow.org.

Fax the completed material order form(s) and a list of materials needed to: 949-609-4665 or e-mail to docents@tomorrow.org.

Upon receipt of the completed form(s), the Program Support Coordinator will contact you to verify the required purchases, order the materials and deliver them to your school.

Please submit order forms at least two weeks prior to the date required for your in-class demo and/or teaching assignment.

Scheduling Considerations

Be considerate of your colleagues when scheduling teaching assignments at the elementary school. Here are some rules of the road to consider:

Select a consistent day of the week to schedule docents at elementary school for the entire year. For example, Tuesday, Wednesday or Thursday. Typically, Mondays and Fridays are difficult days for either the elementary or high school teachers. Work with both the high school and elementary school teachers to select a day of the week that has minimal impact on their schedules.

Select a time that seems to work best for all participating teachers. Scheduling may vary depending on the program configuration. Whenever, possible try to schedule teaching assignments that minimize disruptions to both the cooperating teachers at the elementary school, as well as the high school teachers who have your students for other classes.

When determining teaching schedule, be aware of major school holidays, events and vacations. Don’t schedule teaching assignments the week before Thanksgiving, Christmas, or Spring break. Also, don’t schedule during annual district testing-finals; parent conferences; outdoor education field trips, assemblies, activities or other events at the elementary school.

Try to minimize the time high school docents are out of their other classes. Do not remove docents from their other classes more than once a week or two weeks in a row.
• **Be aware of the elementary school calendar and how it impacts your class time with the high school students.** For example, the high school students will be unable to teach during parent conferences, before major holidays, vacations or events, and during state testing.
CSUF Course Syllabus

CALIFORNIA STATE UNIVERSITY, FULLERTON
DEPARTMENT OF SECONDARY EDUCATION – Fall 2009
EDSC 110: The Teaching Experience: Exploration (3 units)

Instructor:
Course Info:
Office:
Office Hours:
Voice:
E Mail:

Education Unit Conceptual Framework
a transformational journey toward educational advancement and achievement

Core Values

We are a community of educators, educational partners, and students. Seven core values undergird our professional community.

We value learning as a life-long process, professional literature that guides and informs our practice, responsibility to self and to the group, diversity as enriching the whole, multiple pathways to learning including the use of technology, critical inquiry that promotes positive student outcomes, and authentic and reflective assessment. We aspire to adhere to and model these in all our professional interactions.

Through experiencing these core values in their educational journey, we believe our students will embrace and in turn, model them in their professional lives.

Based on our core values, our mission is as follows:

Mission Statement

Our mission is to teach, to serve, and to engage in scholarship. We teach our students to be critical thinkers and lifelong learners. We prepare professionals who improve student learning, promote diversity, make informed decisions, engage in collaborative endeavors, maintain professional and ethical standards, and become change agents in their workplaces. We engage in scholarly work that informs the profession and serve the educational community by providing applied scholarship.

Student Outcomes and Indicators

After successful completion of a program of study, our credential recipients and program graduates are:

Outcome 1: Knowledgeable and Competent Specialists
- Demonstrate a strong foundation in subject matter or field of study
- Demonstrate strong understanding and implementation of pedagogical skills or skills in their field
- Demonstrate ability to use technology as a resource

Outcome 2: Reflective and Responsive Practitioners
- Promote diversity
- Make informed decisions
• Engage in collaborative endeavors
• Think critically

Outcome 3: Committed and Caring Professionals
• Become change agents
• Maintain professional and ethical standards
• Become life-long learners

The Mission of the Department of Secondary Education is to develop quality secondary school teachers. We are committed to providing a program that reflects the complex contexts of the secondary classroom and models a professional community where learning is interactive and dynamic. Our philosophy is to prepare educational leaders through a course of study which bases practice upon knowledge of current research in curriculum and instruction. We develop students as life-long learners, reflective practitioners, and change agents who positively influence decision-making in schools and communities to improve the education of adolescents.

COURSE DESCRIPTION 110 THE TEACHING EXPERIENCE: Exploration (3)

The purpose of this course is to provide high school juniors and seniors an opportunity to explore careers in the teaching profession in a broad context, both from an academic understanding as well as from experience garnered through focused observations in K-12 classrooms. This course requires students to spend 20 hours observing, participating in and reflecting on experiences in K-12 classrooms. It also includes specialized settings such as ELD classrooms and special education programs. Cooperating teachers must be certificated and at least some of the observations must be in classrooms that meet our criteria for student diversity.

Course Competencies and related Objectives:
The course will provide participating students with activities that are designed to enrich their regular education programs.

1. Academic Preparation. Students attend weekly classes where they are instructed in educational pedagogy and learning concepts. This class is taught by the Advisor on the high school campus.

2. Tutoring (Field) Component. Students tutor, or facilitate a small group of elementary, junior high, and/or senior high students a minimum of 6 hours per month (20 hours per semester. 10 hours should be in a K-6 classroom and 5 of those hours must be K-6 science from a list of approved teachers.)

3. Career and Academic Advising. Students receive career and academic advising for entrance into the teaching profession from the high school Advisor, College staff, guest speakers, and during the field trip to the campus.

4. Field Trip. Each semester, students spend one day on the California State University, Fullerton campus attending workshops, hearing speakers from Teacher Education, and touring the facilities on campus.

GRADING POLICY FOR THE COURSE

This course is graded on a Credit/No credit basis. Attendance and satisfactory completion of all assignments and fieldwork is basis for grades. Students who complete all components of the program successfully are awarded three units of college credit.

Cases of academic dishonesty will be dealt with in accordance with procedures established by university policy as described in the class schedule and in the university catalogue.
ACADEMIC DISHONESTY (excerpted from UPS 300.021)

Academic dishonesty includes such things as cheating, inventing false information or citations, plagiarism, and helping someone else commit an act of academic dishonesty. It usually involves an attempt by a student to show a possession of a level of knowledge or skill, which he/she in fact does not possess. Cheating is defined as the act of obtaining or attempting to obtain credit for work by the use of any dishonest, deceptive, fraudulent, or unauthorized means. Plagiarism is defined as the act of taking the work of another and offering it as one’s own without giving credit to that source. An instructor who believes that an act of academic dishonesty has occurred (1) is obligated to discuss the matter with the student(s) involved; (2) should possess reasonable evidence such as documents or personal observation; and (3) may take whatever action (subject to student appeal) he/she deems appropriate, ranging from an oral reprimand to “No credit” in the course. Additional information on this policy is available from University Policy Statement 300.021, http://www.fullerton.edu/senate/.

STUDENTS WITH SPECIAL NEEDS: Please inform the instructor during the first week of classes about any disability or special needs that you may have that may require specific arrangements related to attending class sessions, carrying out class assignments, or writing papers or examinations. According to California State University policy, students with disabilities must document their disabilities at the Disabled Student Services Office in order to be accommodated in their courses.

FIELDWORK ASSIGNMENTS

Description of Fieldwork Expectations

Fieldwork totaling 20 hours in public schools is required in this course. Students must spend the equivalent of 20 hours in one to two hour segments at one school site for a sense of continuity observing in a public school and receive a "satisfactory" evaluation. Your advisor must verify your fieldwork experience and give you a satisfactory evaluation. The verification of your satisfactory completion of this assignment is due the last day of class at the beginning of the period.

- 20 hours in a public school observing a classroom teacher in the same content area of the student in a schedule of regular, ongoing visits, of one or two hour segments; a variety of experiences, such as observing, tutoring, and aiding are suggested at the discretion of the teacher

Students should try to observe in as many varying situations as possible. Students must keep a record of places and times observed (date, time period, school district, school, classroom/subject, grade level, number of students, teacher) and have the observations verified with signatures of field site personnel. Students are encouraged to tutor at two or more levels. For example: elementary, intermediate and/or high school.

Arranging Field Visits

Your high school advisor will help you select a school site in an area that interests you other than one you attended and/or are/have been employed by and/or a family member or significant others attends or is employed by. Call the school and make arrangements to meet with the person in charge of students requesting observation (usually an assistant principal). Take the letter of introduction given to you by your advisor and required documentation when you go to your school site. Begin spending time at your field site when you have made the arrangements.

Course Notebook

During your fieldwork visits, talk with as many of the following people to gather information regarding their experiences. Suggestions:

- administrators, counselors, school nurses
- veteran teachers and new teachers
• a successful student
• a parent/guardian of a successful student
• a failing student
• an English Language Learner (ELL)
• a special population student
• a student having a reading problem
• Staff members (janitor, secretary, etc.)

Note their reactions to the school and to the topics/issues in the course readings and discussions. Note their views on any problems or strengths you see in the school.

Students will keep a Course Notebook (provided) covering their reactions to and evaluation of weekly class activities, personal reflections on the readings, and fieldwork activities. Students will also log fieldwork hours in their Course Notebook. The Course Notebook will be checked at mid-term and collected at the conclusion of the course by your Advisor.

Visit the Community
• After you begin your school site fieldwork, tour the school's neighborhood to learn:
• What is the geographic location of the school?
• What is the neighborhood like (industrial, residential, business, combination)?
• What type of housing is available?
• What is the socioeconomic level of the neighborhood population?
• What are the student demographics (population, academic levels, and ethnic backgrounds)?
• Where do students gather before and after school?
• Is there an accessible public library?
• What services does that library provide for the students?
• Are there recreational services available to the students (clubs, parks, youth organizations)?
• Do you see indications of anything that would make school difficult for students (poverty, drugs, crime, violence, too much wealth, distractions, etc.)?
## COURSE OUTLINE

<table>
<thead>
<tr>
<th>Session</th>
<th>Date(s)</th>
<th>Topic</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sep 10–11</td>
<td>Orientation</td>
<td>Complete Paperwork, Review Course Expectations, CSUF Syllabus &amp; Community Service Requirements.</td>
</tr>
<tr>
<td>2</td>
<td>Sep 14–18</td>
<td>Intro to Teaching (&amp; Model Sample Lesson)</td>
<td>Portfolio: Teaching Strategies, Create lesson to teach to peers (Sept 18-29) – use peer teaching lesson plan/worksheet</td>
</tr>
<tr>
<td>3</td>
<td>Sep 21–25</td>
<td>Intro to Teaching (part 2)</td>
<td>What makes a Good teacher?, Lesson plans/worksheets for lesson, Portfolio: Peer lesson evaluation</td>
</tr>
<tr>
<td>4</td>
<td>Sep 28- Oct 2</td>
<td>Inquiry &amp; Questioning (lecture)</td>
<td>Portfolio: Inquiry &amp; Questioning, Lesson plans/worksheets for lesson, Portfolio: Peer lesson evaluation</td>
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<tr>
<td>5</td>
<td>Oct 5-9</td>
<td>Debrief Peer Teaching Assignment</td>
<td>Portfolio: Teaching Critiques, Portfolio: Standards-based education, Self-Assessment: Science Standards, Begin Lesson Development Checklist for lesson #1</td>
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<td>Team assignments</td>
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<td>Developing Effective Lessons (Lecture)</td>
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<td>Standards-based instruction</td>
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<td>Develop Lesson #1</td>
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<tr>
<td>6</td>
<td>Oct 12 –16</td>
<td>Develop lesson #1</td>
<td>Portfolio: Community Service Log, Portfolio: Observation schedule.doc, Portfolio: Classroom Observation</td>
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<td>Follow-up with students on community service activities.</td>
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<td>Classroom Observation(s)</td>
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<tr>
<td>7</td>
<td>Oct 19-23</td>
<td>Teach standards-based science lessons to classmates &amp; debrief</td>
<td>Assignment: Class Lesson Evaluation/Selection</td>
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<td>Package Lesson #1</td>
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<tr>
<td>8</td>
<td>Oct 26-30</td>
<td>Teach Lesson #1 to elementary</td>
<td>Portfolio: Update Lesson Checklist</td>
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## COURSE OUTLINE

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<tr>
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<th>Date(s)</th>
<th>Topic</th>
<th>Assignment</th>
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<tbody>
<tr>
<td>9</td>
<td>Nov 2 – 6</td>
<td>Classroom Management (lecture)</td>
<td>Update Lesson #1</td>
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<td>Teach Lesson #1 to remaining students</td>
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<td>Portfolio: Lesson Evaluation for lesson #1</td>
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<tr>
<td>10</td>
<td>Nov 9-13</td>
<td>Archive Lesson #1 (hardcopy/electronic)</td>
<td>Start Lesson #2</td>
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<td>Finish tasks outlined in Lesson Development Checklist for lesson #1.</td>
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<td>Begin work outlined in Lesson Development Checklist for Lesson #2.</td>
</tr>
<tr>
<td>11</td>
<td>Nov 16-20</td>
<td>Careers in Teaching Conference</td>
<td>Work on Lesson # 2</td>
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<td>Continue work outlined in Lesson Development Checklist for Lesson #2.</td>
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<td>12</td>
<td>Nov 23-25</td>
<td>Work on Lesson # 2</td>
<td>Begin work outlined in Lesson Development Checklist for Lesson #2.</td>
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<tr>
<td>13</td>
<td>Nov 30–Dec 4</td>
<td>Teach Lesson # 2 to Elementary School Students</td>
<td>Portfolio: Lesson Evaluation for lesson #2</td>
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<tr>
<td>14</td>
<td>Dec 7-11</td>
<td>Start Lesson #3</td>
<td>Begin work outlined in Lesson Development Checklist for lesson #3.</td>
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<td>15</td>
<td>Dec 14-18</td>
<td>Teach Lesson #2 to remaining students</td>
<td>Portfolio: Lesson Evaluation for lesson #2</td>
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<td></td>
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<td></td>
<td>Work on Lesson #3</td>
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<td>Complete tasks outlined in Lesson Development Checklist for Lesson #2.</td>
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<tr>
<td>16</td>
<td>Jan 4-8</td>
<td>Work on Lesson # 3</td>
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<tr>
<td>17</td>
<td>Jan 11-15</td>
<td>Teach Lesson #3 to Elementary School Students</td>
<td>Portfolio: Lesson Evaluation for lesson #3</td>
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<tr>
<td>18</td>
<td>Jan 18-22</td>
<td>Teach Lesson #3 to remaining Elementary School Students</td>
<td>Complete work outlined in Lesson Development Checklist for lesson #3.</td>
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<td>Portfolio: Lesson Evaluation for lesson #3</td>
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<tr>
<td>Final Exam Week</td>
<td>Jan 25-29</td>
<td>Final Exam</td>
<td>Complete Semester portfolio</td>
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<td>Complete community service hour log</td>
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<td></td>
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<td>Archive final exam (electronic/hardcopy)</td>
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**Course Expectations**

During this yearlong course you will be expected to develop and teach standards-based science lesson to elementary school students and participate in 20 hours of community service. The course content includes learning about:

- science content standards for a target elementary school grade level
- effective teaching strategies
- The teaching profession through lectures, interviews, field trips, job shadow experiences and community service

### Course Grading

Your grade will be comprised of the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Assignments</td>
<td>40%</td>
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<tr>
<td>Professional Portfolio</td>
<td>40%</td>
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<tr>
<td>Final Exam</td>
<td>12%</td>
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<tr>
<td>Community Service Hours</td>
<td>8%</td>
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</tbody>
</table>

**Grade Scale (updated by High School Advisor)**

- A
- B
- C
- D

### Professional Portfolio (40%)

During the school year you will be developing a Professional Portfolio that will be used as evidence of your course work and will be used to determine your grades. The portfolio will be collected twice each quarter for progress reports and quarter grades.

The portfolio will contain a variety of tools & resources, evidence of class work and three types of journal entries (lesson plans, research and reflective). The requirements for your portfolio are outlined in the WORD document called Assignment_Portfolio.doc. The journal entries are summarized below:

#### Lesson Plan Entry

Lesson plan entries are completed each time you work on a lesson plan. During the course of a year, you will write six entries – 2 each for earth, life and physical science. The entry will contain the following:

- Science standard or set of standards that will be covered in the lesson
- Learning Objectives for the lesson.
- Prerequisite skills/knowledge and prior experiences that the students need to know before beginning the lesson.
- Key vocabulary that will be taught in the lesson.
- Materials/resources that will be needed to teach the lesson and estimated quantity of each.
- How the lesson will be introduced.
- The hands-on activity and worksheet for the students.
- How the lesson will be closed.

#### Research Entry

Research entries are completed for each science lesson that is taught. During the course of a year, you will write six entries – 2 each for earth, life and physical science. The entry will contain the following:

- Annotated bibliography with 2 teacher websites or references and 2 student websites or references.
YouthTEACH2Learn Program
Course Expectations

- A report (minimum 3 paragraphs) of support information about the science standard and a conclusion about how the research supports the specific grade level standards

New ideas and questions about this research

*Reflective Journal Entry* –

Reflective journal entries are completed each time you teach at the elementary school. Over the course of one year you will have completed approximately six journal entries. The purpose of the reflective journal is to document the relationship between your classroom experience and key educational topics including:

- Teaching standards
- Classroom management
- Teaching strategies
- Inquiry Lessons/questioning
- Integrating technology
- Learning styles

Your journal entries should demonstrate your critical thinking skills and reflect your feelings, thoughts and insights.

*Teaching Assignment* - 40%

*Lesson Development*

Students will be responsible for developing and teaching 6 standards-based science lessons during the school year. All work will be completed in teams comprised of 2-3 members. Responsibilities include:

- researching lessons
- testing lessons
- developing a list of appropriate web sites to be used by teachers and students
- matching lessons to State Science Standards
- creating lab sheets
- creating vocabulary cards
- uploading completed lesson to website
- understanding the science content

*Compiling Kit*

Once the lesson is developed the team will be responsible for securing the appropriate materials to support the lesson, this includes:

- Ordering equipment for lessons
- Creating inventory for kit
- Packing kit

*Lesson Evaluation*

Lessons will be observed and evaluated by the elementary classroom teacher. High School teacher will observe your teaching in the elementary classroom once or twice during the school year. Each docent will complete a self-evaluation after teaching the first and final lesson.

*Semester Finals* – 12%

One final will be given at the end of fall semester and one at the end of spring.

*Community Service Hours* - 8%

20 hours of community service are required as part of the course work. Work habits and citizenship grades are based on the student’s attitude, cooperation and participation in the entire program, both in the science classroom and at the elementary school sites.
**Introduction to Teaching**

**What Makes a Teacher Good?**

**Objective:**
- To give the students an opportunity to reflect on the attributes of teachers from their past educational experiences to determine what characteristics/attributes are needed to make a good teacher and why. This process is designed to have docents begin to decide the qualities/characteristics they must develop in themselves to be a successful teacher while they are in the YouthTEACH2Learn program.
- To provide an exercise in which students are required to work as a team using both their ideas and their classmates to create a single set of group characteristics/attributes of a good teacher. (This process will be used when the class takes group lesson plans and uses them to design the final lesson plan that they will teach in the schools.)

**Lesson:**
- Students have 10 minutes to reflect on their past educational experiences and complete part I of “10 traits of a good teacher” activity.
- **Teamwork:** Review “Becoming an Effective Team Member” with class and break into small groups (5-6 students). Students will work as a team to complete Part II of “10 traits of a good teacher” activity.
- **Report Out:** Teams report their top 10 traits and discuss.
- **Closure:** Consensus as class on the Top Ten Traits of a Good Teacher. Prioritize the list from most important to least important. You can make a poster of their list and hang it in the classroom.
- **Homework:** Have the docents complete the reflection questions (Part III- V) of “What makes a teacher good.”

**Anticipated Time:** 2 hours

**Background Information**
- Effective Team Member.doc
- Portfolio: What makes a teacher good?

**Support Activities (Readings, Videos, Speakers, Lectures)**
- None

**Class Discussion(s)**
- Team report out on 10 traits of a good teacher

**Assessment**
- Complete exercises and questions outlined in Portfolio: What makes a teacher good?

**Closure**
- Compare/Contrast team and teacher characteristics.
- Completion of Portfolio entry
Preparing for the Classroom

Teaching Strategies

Objective

- To orient the students with the various types of the teaching strategies used to cover science concepts.
- To understand the importance of planning a lesson with varied instruction that incorporates many different types of teaching strategies that will meet the needs of English Learners, Special Education or Gifted & Talented students.

Lesson

- Review the various teaching strategies with the strengths and weaknesses of each approach.

Anticipated Time: 2 hours

Background Information

- http://drc.arizona.edu/teach/strategies-for-access.html
  As our population of students diversifies and we work to more create learner-centered environments, many instructors are beginning to vary the teaching strategies they use in their courses. The following chart describes some access challenges to different teaching methods and presents strategies that can help to offset them.
- http://serc.carleton.edu/NAGTWorkshops/coursedesign/tutorial/strategies.html
  Designing Effective and Innovative Courses

Support Activities (PowerPoint Presentations)

- Classroom Lecture: Use CSUF PowerPoint on Differentiated Instruction and Teaching Strategies Power Point.
- Classroom Lecture: Use Teaching Strategies PowerPoint.

Class Discussion(s)

- Why do you feel that it is important to design lessons with varied approaches when teaching a classroom of children?
- Which type of teaching strategies most effectively helped you understand concepts? Create a class bar graph of the teaching strategies vs. the number of students who felt that the strategy was effective for them as learners.

Assessment

- Students complete their professional journal Reflective Entry: Teaching Strategies.

Closure

- Upload Reflective Entry: Teaching Strategies to the server (both student share, and your personal folder) and file a hard copy in Student Portfolio
**Peer Teaching**

**Objective**

- To give the docents the opportunity to develop and present a lesson using the lesson plan template.
- To give the instructor an opportunity to observe the docents teaching a lesson and determine their strengths and weaknesses before creating school teaching teams.

**Lesson**

- **Introduction (Day one):**
  - a. Introduce and discuss lesson plan format that will be used for peer teaching.
  - b. Model lesson based on template so that students see what’s expected.
  - c. Discuss classroom and time management, preparation, materials, lesson plans and worksheets.
  - d. Review rubric and journal entry that will be used for evaluating lessons.
  - e. Discuss the importance of constructive criticism – it is about the lesson. What’s working? Not Working? How do we improve presentation skills?
  - f. **Homework:** Students will create a lesson and worksheet that will be used to teach any subject to their classmates. Each lesson should be a maximum of 15 minutes. Use formats outlined in: Peer Teaching Lesson Plan Template.doc and Peer Teaching Worksheet Template.doc. (Note: The model lesson is provided as a template, feel free to edit it to meet your needs.)

- **High School students teach lessons.** Time varies depending on the number of docents. Anticipate 20-25 minutes per student (includes debrief and transition between students). The lessons will be evaluated on how much they were able to present during the 15 minute time period.
  - a. **Note:** Give the docents a minimum of three days to write the lesson plan and to get the necessary supplies before they begin teaching the lessons to the class.
  - b. Remind students to take notes on the Peer Lesson Evaluation during and at the end of the lesson.

- **Report Out:** Teacher and peer debrief on effectiveness of the lesson (based on Peer Lesson Evaluation). Point out one or two positive elements of the lesson and give one or two things that the docent should begin working on in their presentation skills.

- **Closure:** Complete peer reviews and journal entry (Portfolio_Teaching Critiques).

**Anticipated Time.** Varies depending on the number of students in class. Allocate one day for teacher lecture and modeling lesson and provide 3 days for homework assignment. When scheduling classroom teaching of peer lessons, keep in mind that 2-3 docents can complete a lesson per 50-60 minute time block.

**Background Information**

- Assignment: Peer Lesson Evaluation.doc
- Portfolio_Teaching Critiques.doc
- Peer teaching lesson plan and worksheet templates
Support Activities (Readings, Videos, Speakers, Lectures)
  - None

Class Discussion(s)
  - Debrief on lesson plan evaluations completed by students and summarize characteristics of an effective lesson.

Assessment
  - Complete Peer lesson evaluations and Portfolio: Teaching Critiques.

Closure
  - Review teaching teams for the year.
Standards-Based Education

Objective
- To orient the students with the various types of the standards, particularly the grade level science content standards they will be using to develop science lessons.
- To model standards based science instruction.
- To understand the importance of standards based instruction both at the state and national level.

Lesson
- Explanation of California and National Standards.
- Review the STAR testing and the 5th grade test blueprint.

Anticipated Time: 3 hrs

Background Information
- The Definition of Standards published by Association for Supervision and Curriculum Development (ASCD)
  http://www.ascd.org/portal/site/ascd/menuitem.2a5fd0d221f7fffddeb3ffdb62108a0c/?jsessionid=E1QbZSOjVLpAj8eh2j1rygGyj1Bf70f3NPwrx966p6uJK257zUgtl!287504021
- California Science Content Standards
  http://www.cde.ca.gov/be/st/ss/scmain.asp
- National Standards
  http://www.nap.edu/readingroom/books/nses/overview.html#teaching
- STAR CST Blueprints for 5th grade Science
  http://www.cde.ca.gov/ta/tg/sr/blueprints.asp
- Standards: Here Today, Here Tomorrow Educational Leadership Vol. 59, No. 1, September 2001
- Graphic Organizers
  www.educationoasis.com/curriculum/graphic_organizers.htm

Support Activities (Readings, Videos, Speakers, Lectures)
- Classroom Lecture: Explanation of science standards and framework.
- Show Video: Making Standards Work for You published by Association for Supervision and Curriculum Development
- Students complete worksheet: “Science Standards: Making the standards work for you”

Class Discussion(s)
- Why do you feel that it is important to base the lessons on the science standards?

Assessment
- Students create a Graphic Organizer to explain Standards
• Students completed professional journal, Reflective Entry: Standards Based Education.

Closure

• Students archive Graphic organizer in their professional portfolio.
• Upload *Reflective Entry: Standards Based Education* to the server (both student share, and your personal folder) and file a hard copy in Student Portfolio.
Classroom Observations

Objective

• To provide an orientation for the each teaching team at the school site to which they are assigned.

• To give the docents an opportunity to visit the classrooms that they will teach in and to meet the teachers and the students they will be working with.

• To give the docents the opportunity to observe the classroom teachers’ classroom management and the students abilities.

Lesson

• Students report to office for a brief orientation, which will vary but should include (1) do’s and don’ts while on the elementary campus, (2) sign-in procedure, (3) copy of school map and (4) introduction of principal and clerical staff.

• Students observe each classroom for 15 -20 minutes. Every student must complete a classroom observation packet for each classroom visited.

Anticipated Time. 3 – 5 hours

Background Information

• Review docent responsibilities while on the elementary school campus.

• Provide observation schedule (provided to both the docent teaching team and the elementary school teachers).

• Provide maps and directions from high school to elementary school sites.

• Provide Portfolio: Classroom Observations Packets

Support Activities (Readings, Videos, Speakers, Lectures)

• None

Class Discussion(s): Debrief the classroom observations when the students return to school. Possible prompts: What was the biggest “aha” from your observations? What are some classroom management skills you observed? After observing your students and their ability levels, what are some obstacles you might encounter?

Assessment

• Complete Portfolio: Classroom Observation Packets for each classroom visited

Closure

• Add classroom observation entry to Portfolio
Developing & Teaching Lessons

Objective

During the course of the school year, the class will work together in teams to develop six standards-based age appropriate science lessons aligned to the California State Science Standards. Each lesson will be 30-45 minutes in length (depending on grade level) and will be taught to elementary school students a minimum of two-three times.

Lesson

The lesson development and teaching cycle takes 14 hours over a 3-4 week period. The first lesson developed by the teams will take slightly longer to complete because the students are learning the lesson development process. Important benchmarks:

- **Lecture**: Developing Effective Science Lessons (1-2 hours). Review process for developing effective science lessons and criteria for selecting class lesson that will be taught to all elementary school students.
- **Activity**: Students complete self-assessment of their science content understanding for targeted grade level standard.
- **Lecture**: State Science Content and Investigative/Experimentation Standards and District Curriculum Matrix (1 hour). For additional resources see resource guides for grade level content standards.
- **Teamwork - Lesson Development**: 3-5 hours of initial research and prep time to complete the lesson before teaching class. Students break into their teaching teams to research and brainstorm ideas for hands-on activities, vocabulary and closure for a lesson. Each team will develop, write and teach proposed lesson.

<table>
<thead>
<tr>
<th>Description</th>
<th>Estimated Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn science concepts (use online science modules).</td>
<td>1-2 hrs</td>
</tr>
<tr>
<td>Review existing lesson plans.</td>
<td>.5 hrs</td>
</tr>
<tr>
<td>Discuss ideas for lesson plan with teammates</td>
<td>.5 hrs</td>
</tr>
<tr>
<td>Develop team lesson plan (use <strong>Standard Lesson plan.doc</strong></td>
<td>1-2 hrs</td>
</tr>
</tbody>
</table>

- **Report Out**: Teams present their lessons, discuss the pros and cons of all lessons based on Lesson Evaluation Rubric and reach consensus on the final lesson that will be taught to the elementary students (estimated time 1-2 hours). Note: this may be one lesson selected from all the presentations or a composite of the lessons.

- **Preparing Class Lesson**: 9 hours of work is required for teams to complete lesson in preparation for teaching in the classroom.
  a. **Teamwork**: Teams identify tasks that need to be completed, verify with elementary school teacher that proposed lesson supports their classroom activities, make job assignments, order materials for lesson and confirm teaching date. See Lesson Checklist for requirements.
c. **Closure:** Package kits, verify teaching assignments, complete lesson plans and worksheets.

- **Teaching Lessons – Assignment 1:** HS students leave campus for **one-half day** (depending on program configuration) to complete teaching assignment (time varies depending on number of elementary school students participating) for each lesson created.

- **Report out:** Debrief lesson with teaching team, make changes and repackage kits for next teaching assignment, as necessary.

- **Teaching Lessons – Assignment 2:** HS students leave campus for **one half day** (depending on program configuration) to complete 2nd teaching assignment (time varies depending on number of elementary school students participating).

- **Closure:** Complete teacher guide and archive lesson.

**Anticipated Time:** Total cycle to develop and teach lessons twice is approximately 6 weeks.

**Background Information**

- Assignment: Class Lesson Evaluation
- Portfolio: Lesson Plans.doc
- Standard Lesson Plan.doc
- Standard Worksheet.doc
- Portfolio: Research Entry.doc

**Support Activities (Readings, Videos, Speakers, Lectures)**

- CA State Science Standards
- District Science Curriculum Matrix/Planning Guide
- Elementary School Science Textbook
- Science Content Modules
- Effective Lesson Design

**Class Discussion(s)**

- Lesson development (team and class discussions)
- Characteristics of effective elementary school science lessons
- Consensus on final class lesson for selected science concepts.

**Assessment**

- Complete exercises and questions outlined in *Portfolio_Lesson Plan*
- Complete exercises and questions outlined in *Portfolio_Research Entry*
- Complete Lesson Plan, Worksheet and Teacher Guide

**Closure**

- Complete reflective journal, archive lesson to repository and break down kit.
Developing Effective Teaching Strategies

Classroom Management

Objective

• To acquaint the docents with various classroom management techniques.
• To demonstrate the importance of good classroom management during an effective lesson.

Lesson

• Classroom lecture: Use PowerPoint presentation: Effective Classroom Management for Docents
• Review and Discuss: California Standards for the Teaching Profession: Standard for Creating and Maintaining Effective Environments for Student Learning
• Read: Students read classroom management articles outlined below.
• Classroom Activity: Class discussion and development of Top 10 Classroom Management Techniques.
• Report out: Teacher and students debrief on top 10 classroom management strategies.

Anticipated Time: 3 hrs

Background Information:

• California Standards for the Teaching Profession
  http://www.sfsu.edu/~seconded/castandards1.html

Support Activities (Readings, Videos, Speakers, Lectures)

• A to Z teacher Stuff: Classroom Management by Jody Camp
  http://www.atozteacherstuff.com/pages/1881.shtml
• Top 10 tips for Classroom Discipline and Management
  http://712educators.about.com/od/discipline/tp/disciplinetips.html

Class Discussion(s): School teams discuss how they made lessons effective and the classroom management strategies they used. Docents take notes on suggestions and how they might implement the new strategies into their lesson implementation.

Assessment:

• Students create a Graphic Organizer of the various methods of classroom management strategies (include name and a short description). Rate the effectiveness of each strategy on a scale from 1 (low) to 5 (high).
• Students complete professional journal, Reflective Journal Entry: Classroom Management

Closure:

• Students archive Classroom Management Graphic Organizer to their professional portfolio (Educational Strand-Standards).
• Upload Reflective Journal Entry: Classroom Management to the server (both student share and personal folder) and file a hard copy in Student Portfolio.
Top 10 Tips for Classroom Discipline and Management

By Melissa Kelly


Classroom discipline and management causes the most fear and consternation in new teachers. However, classroom management is a skill that is not only learned but practiced daily. Here are ten tips that can lead to successful classroom management and discipline. These tips can help you cut down on discipline problems and leave you with fewer interruptions and disruptions.

1) It's Easier to Get Easier

Many teachers make the mistake of starting the school year with a poor discipline plan. Students quickly assess the situation in each class and realize what they will be allowed to get away with. Once you set a precedent of allowing a lot of disruptions, it can be very hard to start better classroom management and discipline techniques. However, it is never tough to get easier as the year goes on. While you don't have to follow the adage, "Never smile until Christmas," it does have its merits.

2) Fairness is Key

Students have a distinct sense of what is and what is not fair. You must act fairly for all students if you expect to be respected. If you do not treat all students equitably, you will be labelled as unfair students will not be keen to follow your rules. Make sure that if your best student does something wrong, they too get punished for it.

3) Deal with Disruptions with as Little Interruption as Possible

When you have classroom disruptions, it is imperative that you deal with them immediately and with as little interruption of your class momentum as possible. If students are talking amongst themselves and you are having a classroom discussion, ask one of them a question to try to get them back on track. If you have to stop the flow of your lesson to deal with disruptions, then you are robbing students who want to learn of their precious in-class time.

4) Avoid Confrontations in Front of Students

Whenever there is a confrontation in class there is a winner and a loser. Obviously as the teacher, you need to keep order and discipline in your class. However, it is much better to deal with discipline issues privately than cause a student to 'lose face' in front of their friends. It is not a good idea to make an example out of a disciplinary issue. Even though other students might get the point, you might have lost any chance of actually teaching that student anything in your class.

5) Stop Disruptions with a Little Humor

Sometimes all it takes is for everyone to have a good laugh to get things back on track in a classroom. Many times, however, teachers confuse good humor with sarcasm. While humor can quickly diffuse a situation, sarcasm may harm your relationship with the students involved. Use your best judgment but realize that what some people think as funny others find to be offensive.

6) Keep High Expectations in Your Class

Expect that your students will behave, not that they will disrupt. Reinforce this with the way you speak to your students. When you begin the day, tell your students your expectations. For example, you might say, "During this whole group session, I expect you to raise your hands and be recognized before you start speaking. I also expect you to respect each other's opinions and listen to what each person has to say."
7) Overplan
Free time is something teachers should avoid. By allowing students time just to talk each day, you are setting a precedent about how you view academics and your subject. To avoid this, overplan. When you have too much to cover, you'll never run out of lessons and you will avoid free time. You can also fill up any left over time with mini-lessons as described elsewhere on this site.

8) Be Consistent
One of the worst things you can do as a teacher is to not enforce your rules consistently. If one day you ignore misbehaviors and the next day you jump on someone for the smallest infraction, your students will quickly lose respect for you. Your students have the right to expect you to basically be the same everyday. Moodiness is not allowed. Once your lose your student's respect, you also lose their attention and their desire to please you.

9) Make Rules Understandable
You need to be selective in your rules (no one can follow 180 rules consistently). You also need to make them clear. Students should understand what is and what is not acceptable. Further, you should make sure that the consequences for breaking your rules are also clear and known beforehand.

10) Start Fresh Everyday
This tip does not mean that you discount all previous infractions, i.e. if they have three tardies then today means four. However, it does mean that you should start teaching your class each day with the expectation that students will behave. Don't assume that because Julie has disrupted your class everyday for a week, she will disrupt it today. By doing this, you will not be treating Julie any differently and thereby setting her up to disrupt again (like a self-fulfilling prophecy).
Inquiry Based Instruction

Objective:

- Students understand the definition of inquiry and how to incorporate into the science lesson.

Lesson:

- **Introduction** (Inquiry vs. Traditional Science)
- **Classroom Lecture**: Understanding Science is More than Knowing Facts
  Characteristics of Inquiry-Based Instruction
  Source: Rhode Island Marine & Environmental Graduate Teaching Fellows in K-12 Education, [http://omp.gso.uri.edu/GK-12/scinqry.htm](http://omp.gso.uri.edu/GK-12/scinqry.htm)
  a. Teachers create situations for students to solve problems.
  b. Students make connections to previous knowledge.
  c. Students bring their own questions to learning.
  d. Students investigate to satisfy their own questions.
  e. Students design a way to try out their own ideas.
  f. Investigations may extend over a long period of time.
  g. Students communicate through journal writing, oral presentations, drawing, graphing, charting, etc.
  h. Students revise explanations as they learn.
- **Classroom Activity**: Ice Balloon Activity
- **Report Out**: Teacher and student debrief on how to incorporate inquiry-based instruction into their lesson.

Anticipated Time: **3 hrs**

Background Information:

- Concept to Classroom- Inquiry Based Learning Workshop [http://www.thirteen.org/edonline/concept2class/inquiry/index.html](http://www.thirteen.org/edonline/concept2class/inquiry/index.html)

Support Activities (Readings, Videos, Speakers, Lectures)

Class Discussion/Activities

- Students compare and contrast inquiry and traditional learning strategies.

Assessment

- White board activity- have groups create a Venn diagram that compares and contrasts Inquiry Learning from traditional instruction
- Students complete professional journal, *Reflective Entry: Questioning.*

Closure

- Have the students present Venn diagrams to the class and to discuss ways to teach using inquiry based learning in their lessons. Archive Graphic Organizer to their professional portfolio (Educational Strand: Inquiry)
- Upload Reflective Entry: Questioning to the server (both student share and personal folder) and file the hard copy in the Student Portfolio.
Learning Styles

Objective

- To have the docents identify and assess their own learning styles.
- To have the docents understand the importance of identifying students learning styles and how this information should be used to create effective lessons.

Lesson

- **Classroom Activity:** Students complete, score, and chart the results of a multiple intelligences survey.
- **Read:** Once students are able to identify their own multiple intelligences, briefly read about the differing classifications of multiple intelligences.
- **Discuss:** Student discuss how multiple intelligences influence learning styles and how varied instruction can benefit the differing populations of students.
- **Reflection:** Teacher and students debrief strategies on how they can identify multiple intelligences within their classes and how they can use that information during classroom activities.

Anticipated Time: 2 hr

Background Information:

- For additional background material on Multiple Intelligences visit, [http://www.newhorizons.org/strategies/mi/front_mi.htm](http://www.newhorizons.org/strategies/mi/front_mi.htm)

Support Activities (Readings, Videos, Speakers, Lectures)

- Powerpoint – “It’s not how smart you are but…”
- CSUF PowerPoint – Multiple Intelligences

Class Discussion(s):

- Docent teams discuss how understanding various learning styles can be effective in the classroom and specific teaching strategies for each learning style. Docents take notes on suggestions and how they might integrate the new strategies into their science lessons.

Assessment:

- Students take the Learning Style Survey, score, and chart their results in a Graphic Organizer that displays their learning style strengths.
- Students complete professional journal, Reflective Journal Entry: Learning Styles

Closure:

- Students archive the Learning Style Survey and Graphic Organizer to their professional portfolio.
- Upload **Reflective Journal Entry: Learning Styles** to the server (both student share and personal folder) and file a hard copy in Student Portfolio.
Technology in the Classroom

Objective

• To preview and critique various educational websites that contain lesson plans, support materials, background etc.

• To familiarize students with various technology tools used for classroom management and instruction.

Introduce students to the school or district’s technology plan.

Lesson:

• Day one
  
  Show how technology is used for classroom management (ex: Attendance, E-mail to teachers and parents, grades on-line, test generators and E-mailed home)

  Show examples of the types of technology they can include in their Technology Sampler (e.g. power point lesson, computer game, SMARTBOARDS, probeware, Student Response Units, resources from the National Science Digital Library, teaching applet/simulation video clip or video conference facility or site.

• Day two and three
  
  Take students to the computer lab and have them make their Technology Sampler and complete their Reflective Entry: Integrating Technology

  Integrate technology into a science lesson using one of the resources from their technology sampler.

Anticipated Time: 3 -4 hours

Background Information:

• National Science Digital Library – www.nsdl.org

• KidzOnline http://www.kidzonline.org/TechTraining/

• Your school and/or district resources regarding Media Literacy

Support Activities (Readings, Videos, Speakers, Lectures)

Guest speaker: Invite the school or district technology coordinator to do a presentation on the school and/or district technology plan. How will schools look in the future? What skills will our students need to have to be ready for college/careers?

Class Discussion(s)

• Brainstorm ideas about how technology has changed in your classrooms throughout your K-12 education.

• Discuss ways in which technology tools can be used to make science content more interesting and how it can be used to improve student skills in problem solving, time management, communication and community outreach.

Assessment

• Completion of a Technology Sampler containing an example and a critique of each of the following technologies: (1) power point lesson, (2) computer game (that could be used for review
or for reinforcing a lesson), (3) teaching applet/simulation (4) video clip and (5) video conference facility or site.

- Students completed professional journal, *Reflective Entry: Integrating Technology*

### Closure

- Students archive Technology Sample in their professional portfolio (Educational Strand: Integrating Technology)

- Upload *Reflective Entry: Integrating Technology* to the server (both student share, and your personal folder) and file a hard copy in Student Portfolio.
Science Content Standards

Understanding Elementary School Science Standards

Objective:
- Students learn the process for developing standards-based science lessons.

Lesson:
- Student self-assess their level of understanding of science content
- Student creates KWL Graphic Organizer.
- Teacher reviews with class the CA Science Standards, CA Science Blueprint for Science, District Curriculum Matrix for Elementary School, elementary school textbook
- Students conduct background research on science content

Class Discussion
Teacher relies on student to conduct research on topic to gain a better understanding of science content. Through discussion teacher create KWL graphic organizer, clarifies misconceptions and teaches additional content, as required, to meet the grade level standards. Questions to discuss:
- What’s important for me (and the elementary school teachers) to know prior to teaching a lesson?
- What are the important points the students need to understand to master the content?
- How can we the help students gain this understanding?
- What are some common misconceptions about this concept?
- What else do we need to research?

Anticipated Time: 3 hrs

Background Information:
- Resource Guides for Elementary School Standards (included in Teacher’s Guide)
- CA State Science Framework
- Science Textbooks for participating Elementary Schools
- Science Concept Spiral for California

Support Activities (Readings, Videos, Speakers, Lectures)
- Bill Nye the Science Guy videos, when appropriate
## CA State Science Content Spiral – Adapted for the California State Science Content Standards

(Blueprint adopted by the State Board of Education 10/02)

http://www.cde.ca.gov/ta/tg/sr/documents/grade5sci1105.doc

<table>
<thead>
<tr>
<th>CALIFORNIA CONTENT STANDARDS</th>
<th># of Items</th>
<th>K</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Sciences</strong></td>
<td>18</td>
<td></td>
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<td>Physical Sciences – Grade 5</td>
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</table>

1. Elements and their combinations account for all the varied types of matter in the world. As a basis for understanding this concept:

- **a. Students know** that during chemical reactions the atoms in the reactants rearrange to form products with different properties.
- **b. Students know** all matter is made of atoms, which may combine to form molecules.
- **c. Students know** metals have properties in common, such as high electrical and thermal conductivity. Some metals, such as aluminum (Al), iron (Fe), nickel (Ni), copper (Cu), silver (Ag), and gold (Au), are pure elements; others, such as steel and brass, are composed of a combination of elemental metals.
- **d. Students know** that each element is made of one kind of atom and that the elements are organized in the periodic table by their chemical properties.
- **e. Students know** scientists have developed instruments that can create discrete images of atoms and molecules that show that the atoms and molecules often occur in well-ordered arrays.
- **f. Students know** differences in chemical and physical properties of substances are used to separate mixtures and identify compounds.
- **g. Students know** properties of solid, liquid, and gaseous substances, such as sugar (C₆H₁₂O₆), water (H₂O), helium (He), oxygen (O₂), nitrogen (N₂), and carbon dioxide (CO₂).
- **h. Students know** living organisms and most materials are composed of just a few elements.
- **i. Students know** the common properties of salts, such as sodium chloride (NaCl).

| Physical Sciences – Grade 4 | 7 |

1. Electricity and magnetism are related effects that have many useful applications in everyday life. As a basis for understanding this concept:
### CALIFORNIA CONTENT STANDARDS

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<th>Item</th>
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</thead>
<tbody>
<tr>
<td>a. Students know how to design and build simple series and parallel circuits by using components such as wires, batteries, and bulbs.</td>
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<td>b. Students know how to build a simple compass and use it to detect magnetic effects, including Earth's magnetic field.</td>
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<tr>
<td>c. Students know electric currents produce magnetic fields and know how to build a simple electromagnet.</td>
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<tr>
<td>d. Students know the role of electromagnets in the construction of electric motors, electric generators, and simple devices, such as doorbells and earphones.</td>
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<tr>
<td>e. Students know electrically charged objects attract or repel each other.</td>
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<tr>
<td>f. Students know that magnets have two poles (north and south) and that like poles repel each other while unlike poles attract each other.</td>
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<tr>
<td>g. Students know electrical energy can be converted to heat, light, and motion.</td>
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### Life Sciences

#### Life Sciences – Grade 5

2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept:

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<tr>
<th>Item</th>
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</thead>
<tbody>
<tr>
<td>a. Students know many multicellular organisms have specialized structures to support the transport of materials.</td>
<td>1</td>
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<tr>
<td>b. Students know how blood circulates through the heart chambers, lungs, and body and how carbon dioxide (CO₂) and oxygen (O₂) are exchanged in the lungs and tissues.</td>
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<tr>
<td>c. Students know the sequential steps of digestion and the roles of teeth and the mouth, esophagus, stomach, small intestine, large intestine, and colon in the function of the digestive system.</td>
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<tr>
<td>d. Students know the role of the kidney in removing cellular waste from blood and converting it into urine, which is stored in the bladder.</td>
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<tr>
<td>e. Students know how sugar, water, and minerals are transported in a vascular plant.</td>
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<tr>
<td>f. Students know plants use carbon dioxide (CO₂) and energy from sunlight to build molecules of sugar and release oxygen.</td>
<td>1</td>
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<tr>
<td>g. Students know plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide (CO₂) and water (respiration).</td>
<td>1</td>
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</tbody>
</table>

### Life Sciences – Grade 4

9
### CA Science Standards Spiral

#### CALIFORNIA CONTENT STANDARDS

<table>
<thead>
<tr>
<th>2. All organisms need energy and matter to live and grow. As a basis for understanding this concept:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Students know plants are the primary source of matter and energy entering most food chains.</td>
</tr>
<tr>
<td>b. Students know producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.</td>
</tr>
<tr>
<td>c. Students know decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Students know ecosystems can be characterized by their living and nonliving components.</td>
</tr>
<tr>
<td>b. Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.</td>
</tr>
<tr>
<td>c. Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.</td>
</tr>
<tr>
<td>d. Students know that most microorganisms do not cause disease and that many are beneficial.</td>
</tr>
</tbody>
</table>

#### Earth Sciences

<table>
<thead>
<tr>
<th>Earth Science – Grade 5</th>
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<tbody>
<tr>
<td>3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept:</td>
</tr>
<tr>
<td>a. Students know most of Earth’s water is present as salt water in the oceans, which cover most of Earth's surface.</td>
</tr>
<tr>
<td>b. Students know when liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.</td>
</tr>
<tr>
<td>c. Students know water vapor in the air moves from one place to another and can form fog or clouds, which are tiny droplets of water or ice, and can fall to Earth as rain, hail, sleet, or snow.</td>
</tr>
<tr>
<td>d. Students know that the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water.</td>
</tr>
<tr>
<td>e. Students know the origin of the water used by their local communities.</td>
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<td>CALIFORNIA CONTENT STANDARDS</td>
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<tr>
<td><strong>4. Energy from the Sun heats Earth unevenly, causing air movements that result in changing weather patterns. As a basis for understanding this concept:</strong></td>
</tr>
<tr>
<td>a. Students know uneven heating of Earth causes air movements (convection currents).</td>
</tr>
<tr>
<td>b. Students know the influence that the ocean has on the weather and the role that the water cycle plays in weather patterns.</td>
</tr>
<tr>
<td>c. Students know the causes and effects of different types of severe weather.</td>
</tr>
<tr>
<td>d. Students know how to use weather maps and data to predict local weather and know that weather forecasts depend on many variables.</td>
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<tr>
<td>e. Students know that the Earth's atmosphere exerts a pressure that decreases with distance above Earth's surface and that at any point it exerts this pressure equally in all directions.</td>
</tr>
<tr>
<td><strong>5. The solar system consists of planets and other bodies that orbit the Sun in predictable paths. As a basis for understanding this concept:</strong></td>
</tr>
<tr>
<td>a. Students know the Sun, an average star, is the central and largest body in the solar system and is composed primarily of hydrogen and helium.</td>
</tr>
<tr>
<td>b. Students know the solar system includes the planet Earth, the Moon, the Sun, eight other planets and their satellites, and smaller objects, such as asteroids and comets.</td>
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<tr>
<td>c. Students know the path of a planet around the Sun is due to the gravitational attraction between the Sun and the planet.</td>
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<tr>
<td><strong>Earth Science – Grade 4</strong></td>
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<tr>
<td><strong>4. The properties of rocks and minerals reflect the processes that formed them. As a basis for understanding this concept:</strong></td>
</tr>
<tr>
<td>a. Students know how to differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation (the rock cycle).</td>
</tr>
<tr>
<td>b. Students know how to identify common rock-forming minerals (including quartz, calcite, feldspar, mica, and hornblende) and ore minerals by using a table of diagnostic properties.</td>
</tr>
<tr>
<td><strong>5. Waves, wind, water, and ice shape and reshape Earth’s land surface. As a basis for understanding this concept:</strong></td>
</tr>
<tr>
<td>a. Students know some changes in the earth are due to slow processes, such as erosion, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.</td>
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### CALIFORNIA CONTENT STANDARDS

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b. **Students know** natural processes, including freezing and thawing and the growth of roots, cause rocks to break down into smaller pieces.  
1

| b. Students know natural processes, including freezing and thawing and the growth of roots, cause rocks to break down into smaller pieces. | 1 |

| | | | | | |

| 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). | 2 |

| | | | | | |

#### Investigation and Experimentation

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| Investigation and Experimentation | 6 |

| Investigation and Experimentation – Grade 5 | 4 |

6. **Scientific progress is made by asking meaningful questions and conducting careful investigations.** As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. **Students will:**

| a. Classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria. | |

| b. Develop a testable question. | |

| c. Plan and conduct a simple investigation based on a student-developed question and write instructions others can follow to carry out the procedure. | |

| d. Identify the dependent and controlled variables in an investigation. | |

| e. Identify a single independent variable in a scientific investigation and explain how this variable can be used to collect information to answer a question about the results of the experiment. | |

| f. Select appropriate tools (e.g., thermometers, meter sticks, balances, and graduated cylinders) and make quantitative observations. | |

| g. Record data by using appropriate graphic representations (including charts, graphs, and labeled diagrams) and make inferences based on those data. | |

| h. Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion. | |

| i. Write a report of an investigation that includes conducting tests, collecting data or examining evidence, and drawing conclusions. | |

| Investigation and Experimentation – Grade 4 | 2 |

6. **Scientific progress is made by asking meaningful questions and conducting careful investigations.** As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. **Students will:**
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<tr>
<td>a. Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.</td>
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<td>b. Measure and estimate the weight, length, or volume of objects.</td>
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<td>c. Formulate and justify predictions based on cause-and-effect relationships.</td>
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<td>d. Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.</td>
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<td>e. Construct and interpret graphs from measurements.</td>
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<tr>
<td>f. Follow a set of written instructions for a scientific investigation.</td>
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<td><strong>TOTAL</strong></td>
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Kinder State Science Standards

Kinder CA State Science Standards
http://www.cde.ca.gov/be/st/ss/sckindergarten.asp

State Science Framework – Chapter 3 – Kinder

Blueprints
- See Science Concept Spiral for California

Earth Science

The changing Earth over time (3a,c)  Weather (3b)
- What features do we find on the earth’s surface?
- What natural resources do we use? How do we conserve them?
- How do changes in our weather affect us?

Resources about the Earth


Resources about Weather


Life Science

**Ecosystems - Plants: (2a, b,c)**

- What are the main structures of a plant? (2c)
- What is the behavior of a plant? (2a,c)
- What are the similarities and differences between plants & animals? (2a)

**Ecosystems - Animals: (2a, b, c)**

- What are the main structures of an animal? (2c)
- What is the behavior of an animal? (2a,c)
- What are the similarities and differences between plants and animals? (2a, 2c)

**Resources**

**Teacher’s Domain**


Kids News Network – What do animals need to live? [http://ksnn.larc.nasa.gov/k2/s_animals.html](http://ksnn.larc.nasa.gov/k2/s_animals.html)
Physical Science
What are physical properties and how do we use them when describing materials?

Properties of Matter (1a)
- How can objects be described? (1a)
- What physical properties can be used to describe objects? (1a)

Physical Changes (1 b,c)
- What are the properties of water? (1b)
- What factors affect the rate of evaporation of water?

Resources about Properties of Matter and Chemical Reactions

Teacher’s Domain – Water Phases:
NASA’s KNN (Kid’s Network News) [http://ksnn.larc.nasa.gov/k2/s_statesMatter.html](http://ksnn.larc.nasa.gov/k2/s_statesMatter.html)
1st State Science Standards

1st Grade CA State Science Standards
http://www.cde.ca.gov/be/st/ss/scgrade1.asp

State Science Framework – Chapter 3 – Grade One

Blueprints
- See Science Concept Spiral for California

Earth Science

Weather Tools (3a)          Weather (3b,c)
- What tools can be used to measure weather conditions?
- How do you measure changes day-to-day and across seasons?
- What is the difference between weather and climate?
- How does the amount of sunshine affect the weather in a region?

Resources about Weather Tools

Teacher’s Domain – Kid Meteorologist
http://www.teachersdomain.org/resources/ess05/sci/ess/watcyc/kidmeteor/index.html

Resources about Weather

Life Science

The Needs of Living Things – Animals (2a, b, c, d)

- What do animals need to survive? (2b)
- What do animals eat? (2c)
- How can we infer what animals eat? (2d)

Photosynthesis – Plants (2b, e)

- What do plants need to survive? (2b)
- What’s the purpose of plant roots & leaves? (2e)

Ecosystems: (2a, c)

- What are the different kinds of environments plants & animals inhabit? (2a)
- How do plants & animals adapt to the environment (2a, 2c)

Life Science Resources

Teacher’s Domain – Index to Life Science:

Teacher’s Domain – The Needs of Living Things
http://www.teachersdomain.org/resources/tdc02/sci/colt/lp_stayalive/index.html

Teacher’s Domain – Plant Life Cycles
http://www.teachersdomain.org/resources/tdc02/sci/colt/lp_plantcycle/index.html
Physical Science

Properties of Objects & Materials (1 a)  
- How are solids different from liquids and gases?
- How are solids the same as a liquid or gas?
- What are the similarities and differences between solids, liquids, and gases?

Chemical Reactions (1 b)  
- What happens when substances are mixed together?
- How do you know a chemical change has occurred?

Resources about Properties of Matter and Chemical Reactions
Earth Science

The changing Earth over time

- What properties can be used to classify rocks? What are rocks made of? (3a,b)
- How do rocks break down into different types of soil? (3c)
- What can scientists learn by studying fossils? (3d)

Natural resources

- How are natural resources used by humans? (3e)

Earth Science Resources
Life Science

Ecosystems – Animals

- What are the life cycle stages for animals? How do life cycles differ for animals? (2a,b)
- Where do animals get their characteristics from? (2c,d)

Ecosystems - Plants

- What are the life cycle stages for plants? How does it differ from animals? (2e, f)
- How do light, gravity and touch affect plant growth and behavior? (2e)

Life Science Resources


Teacher’s Domain – The Needs of Living Things

Teacher’s Domain – Plant Life Cycles
http://www.teachersdomain.org/resources/tdc02/sci/life/colt/lp_plantcycle/index.html
Physical Science

Motion (1a,b, g)
• How is an object’s motion observed and measured? (1a,b)
• What causes a sound? (1g)

Forces (1c,d,e,f)
• How do “pushes & pulls”, gravitational, and magnetic forces move objects?

Resources about Properties of Matter

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<thead>
<tr>
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<tbody>
<tr>
<td>What is gravity?</td>
<td><a href="http://ksnn.larc.nasa.gov/k2/s_whatGravity.html">http://ksnn.larc.nasa.gov/k2/s_whatGravity.html</a></td>
</tr>
</tbody>
</table>
### Earth Science

**Viewing Universe (4a,c)**

- What do we know about stars?
- How do telescopes help us view the universe? (4c)

**Solar System (4b,d,e)**

- What are the planets in the solar system?
- What is the relationship between earth, the sun and the moon? (4d, e)
- How does the moon’s appearance change during the lunar cycle? (4b)

### Resources about Viewing the Universe

**Telescopes: Super Views of Space** (Article from the Moveable Museum) -
http://www.amnh.org/education/resources/rfl/pdf/du_x02_telescopes.pdf

**Building a Telescope** (Article from the Moveable Museum)

**Teacher’s Domain – How Big is our Universe?**
http://www.teachersdomain.org/resources/ess05/sci/ess/eiu/biguniverse/index.html

**Teacher’s Domain – Telescope Girl**
http://www.teachersdomain.org/resources/phy03/sci/phys/mfe/ztelegirl/index.html
Resources about the Solar System

Teacher’s Domain – Phases of the Moon

http://www.teachersdomain.org/resources/ess05/sci/ess/eiu/mphase/index.html
Life Science – How do plants and animals co-exist in a biome (ecosystem)?

Ecosystems – Animal (3a,b,c,d,e)
- What are the animal structures and their function? (3a)
- What is the interrelationship between the animal and its environment? (3b,e)
- How do animals adapt to their environment? (3c,d)

Ecosystems – Plants (3a,b,c,d,e)
- What are plant structures and their function? (3a)
- What is the interrelationship between plants and the environment they are found? (3b,e)
- How do plant adapt to their environment? (3c,d)

Life Science Resources

Physical Science

Principles of energy (1a,b,c,d):
- Where does energy come from? (1a)
- How is energy stored? (1b)
- How is energy converted? (1c, d)

Forms of Matter (1e,f,g,h,i)
- What are the forms of matter? (1e)
- What happens when matter changes? (1f,g)
- What is an atom? How is it represented? (1h,i)

Principles of light (2a,b,c,d):
- What are the properties of light energy have?
- How do the properties of light influence how we see objects and images?
Physical Science Resources
4th State Science Standards

4th Grade CA State Science Standards
http://www.cde.ca.gov/be/st/ss/scgrade4.asp

State Science Framework

Blueprints
- See Science Concept Spiral for California

Earth Science

Rocks and Minerals (4 a, b)
- How are rocks formed? (4a)
- How can rocks and minerals be identified? (4b)
- How are they different? (4a,b)

Weathering and other natural processes change the earth’s surface (5,b,c)
- What types of natural processes change the earth’s surface? (5a, b, c)
- What are their specific characteristics? (5a,b,c)
- How does the specific process change the earth’s surface?

Notes about natural processes
- Physical weathering: wave, water, wind and ice
- Chemical weathering: for example, acid rain (atmosphere) or acid mine drainage (underground)
- Plate tectonics

Resources about Rocks & Minerals
Teacher’s Domain – Earth System, Structure & Processes

Teacher’s Domain – Rock Cycle
http://www.teachersdomain.org/6-8/sci/ess/earthsys/subtopic_rockcyc.html

Resources about Erosion
Teacher’s Domain – Earth System, Structure & Processes

Teacher’s Domain – Erosion
Life Science

Food Chains – Set 2a, b, c
• What are the organisms in a food chain?
• What role does each organism play?
• How is energy passed through it?

Ecosystems - (3 a,b,c,d)
• What are the components make up an ecosystem? (3a)
• What are the roles of the living organisms in an ecosystem? (3c,d)
• How do plants and animals survive in an ecosystem? (3b)

Resources about Food Chains

Teacher’s Domain – Producers, Decomposers
Physical Science

Electricity (1 a,e,g)

- What is a series circuit and how do you build it? (a)
- What is a parallel circuit and how do you build it? (a)
- What is static electricity? Why do electrically charged objects attract or repel each other? (e)
- How is electricity converted to other forms of energy? (g)

Magnetism or electromagnetism (1 b,c,d,f):

- What is a magnetic field? What are the specific characteristics? (c)
- How does a compass work? What happens when it is exposed to a magnetic field? (b,f)
- What is the connection between electromagnets and electrical devices (e.g. doorbells, motors, generators)? (d)

Resources about Electricity

The National Science Center  [http://www.nationalsciencecenter.org/eo/EntryPage.cfm](http://www.nationalsciencecenter.org/eo/EntryPage.cfm)


Resources on Magnetism

The National Science Center  [http://www.nationalsciencecenter.org/eo/EntryPage.cfm](http://www.nationalsciencecenter.org/eo/EntryPage.cfm)
Earth Science

Weather

- How does the water cycle (hydrologic) affect weather patterns? (3a,b,c,d,e)
- How do solar energy, atmospheric pressure and the ocean affect weather patterns? (3a, b, c)

Solar System

- What are the sun’s characteristics? (5a)
- What is the solar system comprised of? (5b)
- How does the sun’s gravitational force influence movement within the solar system? (5c)

Resources for the Solar System

British Broadcasting System – Science & Nature: Space:
http://www.bbc.co.uk/science/space/solarsystem/


Resources for the Water Cycle


The Evergreen Project: http://www.mbgnet.net/fresh/cycle/index.htm

Resources for the Weather


Physical Science

Classification of matter
- What is a molecule? What is an atom? (1b,g)
- What are elements, compounds and mixtures? (1a,b,f,g)
- What can we learn from the arrangement of the periodic table? (1c,d)

Chemical Reactions
- How does a chemical reaction create new products? (1a)

Separation of Mixtures
- In what ways can mixtures be separated? (1f)

Resources about Chemistry
Life Science

The needs of living things – Animals

- What structures do animals need to perform the vital functions necessary for life? (2 a,b,c,d)
- What is the importance of digestion, respiration, cellular respiration, circulation and materials transport in an animal? (2 a,b,c,d,g)

The needs of living things – Plants

- What structures do plants need to perform the vital functions necessary for life? (2e, f)
- What is the importance of photosynthesis, cellular respiration, and materials transport in a plant? (2 a, e, f, g)

Resources for the Human Body

The Virtual Body [http://medtropolis.com/](http://medtropolis.com/)

Resources for Plants

