Teaching related to scientific literacy needs to be consistent with the spirit and character of scientific inquiry and with scientific values. This suggests such approaches as starting with questions about phenomena rather than with answers to be learned; engaging students actively in the use of hypotheses, the collection and use of evidence, and the design of investigations and processes; and placing a premium on students’ curiosity and creativity. (Zemelman, Daniels, & Hyde, *Best Practice*)

Course Overview

Welcome to 401 and to continuing your next step in your career as a teacher! I hope this course will help you become an effective, enthusiastic, and adventurous teacher.

Children have a natural fascination with the world around them, and topics in science are often of great interest to young children. The purpose of this course is to acquaint beginning elementary teachers with various instructional principles and practices for engaging children in science in ways that help them develop their abilities to explore and make sense of their world.

To teach science so that all students learn science well, teachers need a strong professional knowledge base on which to rely when making pedagogical decisions. No single course can provide teachers with everything that they need to know in order to teach science effectively. This course will help you begin building the professional knowledge base necessary for teaching science and will engage you in a professional learning cycle so that you can continue to build your science teaching professional knowledge throughout your teaching career. Our goal is to enable you to continue to be a lifelong learner and help your students become lifelong science learners too.

This course is designed to engage you in four types of experiences that will develop your professional knowledge base. First, we will focus on learning some science together by engaging in some scientific inquiry and thinking about how you might want to teach your students. Second, we’ll focus on the methods of teaching science by learning more about what science is, how children learn science, what we need to teach in science (standards), and how we want to teach science. Part of deciding how to teach science will include studying different models of science teaching, and learning how to: establish a community of learners, assess science learning,
use technology successfully, address diverse learner needs, and build lesson plans for science units. Third, you will work in the field as a pre-teacher. Part of your experience will include assessing students’ understanding of science and developing and teaching a lesson across several days and assessing your teaching of that lesson. Finally, you will identify and investigate an aspect of science teaching that you are interested in learning more about such as working more effectively with Special Education students, integrating science lessons with other subject areas, and incorporating informal science learning experiences (i.e., visiting the Zoo) as part of your teaching.

**Effective Science Teaching**

There are many different ways to think about science and the teaching and learning of science. This course will examine several different views of science teaching and support you in developing teaching so that you can be a more effective educator. While each view has strengths and weaknesses, we will emphasize ones have found particularly useful in supporting teaching all students for understanding and motivation, that are consistent with the way science is conducted, and are informed by how children learn and know the world.

In particular, we will focus on science teaching that helps all learners make sense of their world through scientific inquiry and application. In other words, we will focus on fostering sensemaking by paying attention to children and their ways of knowing, and providing them opportunities to address questions about the world, investigate patterns from experiences about those questions, construct explanations to those questions based on their evidence, compare those explanations with those from science, and apply those explanations to other parts of the world around them. We will be looking at better understanding state and district guidelines and curriculum materials as they have a large influence over how we teach science. We will learn how our materials and our teaching can be modified to more effectively address substantial learning goals and the needs of our students we teach. We will also begin to learn how to build a productive learning community that can support children’s thoughtful participation in small groups and class conversations.

**More on the Role of Field Experience**

Field experience is an important part of this course. During your four hours of field time each week, you will be observing and assisting in the teaching of science lessons in your field placement. You will be expected to connect/reflect on what we are exploring in class, including the readings, with what you are seeing in the classroom and to connect what you are seeing in the classroom with what you are learning in class. You will plan and teach one lesson across two instructional periods in a sequence on a topic that you will coordinate with your CT and other class members sharing your placement. Your planning and teaching should reflect what you learn in this course about teaching science so that all students learn science.

**Course Goals**

During this course students will learn to:

- Understand science as a way of knowing the world and involving a process of inquiry.
Better understand how different learners come to science with a variety of prior knowledge, experiences, language, and practices. Use this knowledge in teaching to help students bridge their ways of knowing the world with those of science.

- Use the Michigan and local district science standards in planning and teaching science.
- Distinguish among pedagogical models of teaching such as: didactic, discovery, conceptual change, and guided inquiry as reflected in curriculum materials and classroom practice.
- Apply knowledge of science, theories about student learning in science, and best teaching practices to planning and teaching science.
- Select, evaluate, and modify curriculum materials, in light of the above understandings of learning theory, instructional approaches, and science content goals to plan and teach instructional sequences that meet the diverse learning needs of students.
- Reflect on teaching practices to foster a life-long approach to teaching with a focus on building a science knowledge base.

**Program Standards**

This course addresses the TE Professional Teaching Standards. We will consider aspects of each of these program standards in the discussions, activities, and assignments. The program standards are:

- Employ a liberal education,
- Teach a subject matter,
- Engage and respond to students,
- Organize a class,
- Use an equipped school room,
- Join a faculty and school,
- Engage guardians and community, and
- Grow professionally.

It will be helpful for you to become familiar with these standards and their elaborations as a resource in your professional development. For further elaboration of the standards see the Teacher Preparation Program website. [http://www.education.msu.edu/te/Elementary/Policies/Professional-Teaching-Standards.asp](http://www.education.msu.edu/te/Elementary/Policies/Professional-Teaching-Standards.asp)

**Readings & Resources**

Reading assignments are listed in the course schedule posted on the course Angel website and will be reiterated (and possibly revised) on a weekly basis. You are expected to read the material before class and bring a copy to class in either electronic form (on a laptop) or hard copy. Required texts can be purchased at the campus book store.

**Required Texts for 401 and internship year:**

Building on Student's Strengths. NSTA press: National Science Teachers Association

Additional Required Readings - Some readings for this course are provided for you as PDFs on the course Angel website.

Important Websites

MSU
TE401 Section 6 Science website (NOTE: Be sure to check the science site—FS10-TE-401-006 Tchng Sub Mat Diverse Lrn-Elem Science) - http://www.angel.msu.edu

Standards

School Districts
Dewitt: http://dewittschools.net
East Lansing: http://elps.k12.mi.us/education/district/district.php?sectionid=1
Holt Public Schools: http://www.okemosschools.net/education/district/district.php?sectionid=1
Okemos: http://www.okemosschools.net
Lansing: http://www.edline.net/pages/Lansing_SD

District Curriculum Documents
Check with your CT for the most current documents.
Assignments and Point Values

Detailed assignment descriptions and grading rubrics will be posted on the course Angel website.

Discussions and Reflections (10%)

Throughout the semester, you will reflect on and discuss ideas from the readings and how they relate to what is going on in your field placements. You will also reflect on videos of science teaching, field trips, and observations of an experienced science teacher classroom. Regularly, the discussions and reflections will occur as part of class activities or as entries that entail you writing up a response and posting it on our Angel discussion area https://angel.msu.edu. These discussions (including entries) and reflections will help us focus on some important ideas in science teaching, learn how to think about these ideas and how they relate to our classroom experiences, and help us interpret them with one another.

Science Lesson Planning, Field-Based Teaching, & Reflection (50%)

One of the main foci of this class will be helping you prepare, teach, and reflect on a science lesson across two days in the classroom. In order to do that, you will figure out (with your cooperating teacher and instructors) what you will focus on for your lesson, look at the curriculum materials you have available, talk to your students about what they know about the topic and what experiences they have had, think about the unit sequence that your lesson is in, teach your lesson, assess students’ learning from your lesson, and reflect on your teaching. We will work on the various components of your lesson planning and teaching throughout the semester.

Lesson Plan (30%)

- Unit identification and learning goals
- Curriculum materials analysis
- Knowing your students
- Assessment
- Activity sequence and rationale
- Lesson procedures

Analysis of Student Learning & Final Reflection (20%)
Teaching a Mini Lesson to Peers (10%)

Final Project (15%)

This final project is designed to help extend what you will have learned about science teaching. You will work in groups of two or three to identify an aspect of science teaching that are interested in learning more about such as classroom management strategies, working more effectively with English Language Learners or Special Education students, ways to effectively engage more learners in whole or small group discussions, integrating science lessons as part of other subject areas such as social studies, literacy or mathematics, and ways to effectively incorporate informal science learning experiences (e.g., field trips to the zoo or MSU Children’s Garden) as part of your science teaching. So, you can start investigating an area in greater depth and share that with your colleagues.

After getting approval on your area of focus from your instructor, you will need to research information on the topic and synthesize your findings in the final paper and presentation.

You will share your findings with one another and teach each other what you have learned.

  Paper (10%)
  Project Presentation (5%)

Science Teaching Philosophy (5%)

Class Attendance (10%)

Assignment Expectations

Be prepared to discuss ideas from the readings at the beginning of the class to allow for thoughtful conversation and participation. Some reflections from readings and other class activities will be required to be posted on Angel.

All assignments should be posted on Angel by midnight of the required due date.
### General Grading Scale & Rubric

<table>
<thead>
<tr>
<th>Points</th>
<th>4 Point Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>95-100</td>
<td>4.0</td>
<td>This represents outstanding and exemplary work. The student uses and integrates readings, classroom discussions, and field experiences (where appropriate) to inform his/her writing. The student meets all the requirements of the assignment, is deeply thoughtful, and provides many details and examples to support writing. The writing contains no errors in grammar, punctuation, and spelling.</td>
</tr>
<tr>
<td>90-94</td>
<td>3.5</td>
<td>This represents high quality work. The student uses many readings, classroom discussions, and field experiences (where appropriate) to inform the writing. Meets all the requirements of the assignment, is thoughtful and provides some details and examples to support writing. The writing contains very few errors in grammar, punctuation, and spelling.</td>
</tr>
<tr>
<td>85-89</td>
<td>3.0</td>
<td>This represents good quality work, performing at expected level for senior year. The student uses some readings, classroom discussions, and field experiences to inform writing. Meets all requirements of assignment, shows attempt to engage with the purposes of the assignment, provides details and examples to support writing. The writing contains few errors in grammar, spelling, and punctuation.</td>
</tr>
<tr>
<td>80-84</td>
<td>2.5</td>
<td>This represents work below expected level of quality for the TE program. The student does not include appropriate references to relevant readings, class discussions, and field experiences to inform writing. The student does not meet all requirements of assignment. The student’s writing represents a limited attempt to engage with the purposes of the assignment, few details and examples to support writing. The writing includes many errors in grammar, spelling, and punctuation.</td>
</tr>
<tr>
<td>75-79</td>
<td>2.0</td>
<td>This represents work significantly below expected level of quality. The student’s writing includes many errors in grammar, spelling and punctuation. The work shows little evidence of having read course readings, of uses of classroom discussions or of field experiences. The writing meets few of the assignment’s requirements. The student demonstrated a shallow attempt to engage with the purposes of the assignment, no details or examples to support the writing.</td>
</tr>
</tbody>
</table>
Professional Expectations and Responsibilities

Participation in TE401 Class: Learning to teach is partly a function of being a member of a community of learners who interact to build knowledge about teaching and learning. We expect you to make regular and thoughtful contributions to class activities, discussions, and group projects for your own learning and those of others. Thoroughly preparing for class by careful reading and reflection, timely completion of assignments, and thoughtful in-class participation is necessary for all students to have a productive learning experience in this course. Further, we will aim to create an environment where students can respectfully and thoughtfully disagree since different perspectives are often central to substantive conversation. Learning to question, argue, support one’s viewpoints, compromise, and consider alternative perspectives are all part of effective class participation.

In order for the classroom learning community to work effectively, we ask to ensure that as few distractions as possible interfere with everyone’s learning. While we encourage you to bring your laptop for educational use, surfing the internet, chatting, receiving calls, texting and other aspects that do not relate to the course activities are not allowed. They are highly distracting to you, your classmates, and your instructor and reflect badly on your professional demeanor as a future teacher. Cell phones should be switched off during the class – exceptions involving emergency situations (e.g., a sick child at school, a close relative in the hospital) will be rare and should be discussed with the course instructor. There will be a ten-minute break during every class period during which you will be able to check email and use cell phones.

Written assignments: All assignments should be typed and include your name and course section number. References to course readings or outside texts should be cited using APA style, the citation protocol for the social sciences (which includes the field of education).

Directions for APA style for references and citations are available at http://webster.commnet.edu/apa/apa_index.htm and many other places on the web. Students may also wish to purchase the Publication Manual of the American Psychological Association (5th ed. American Psychological Association: New York, 2001). Also, see the library website: http://staff.lib.msu.edu/corby/reference/citeinfo.htm

Keep in mind that scholarly work is more than opinion and the simple description of readings. It requires reflection and inquiry as well as citation of readings and the literature as evidence in support of your position(s). Good writing is critical in communicating effectively to your future students and their families as you write report cards, lesson plans, letters home, memos email, and other things. It is very important you communicate clearly, efficiently, with proper grammar, and with an appropriate tone. Thus, we hold your writing for this course to these same high expectations. You should proofread your writing (including emails!) and get help on your writing as needed (see information about the new writing center in Erickson below).

Your work will be uploaded using the discussion cites and dropbox features on ANGEL. For individual files, you must save the assignment and name it as directed (generally, as yourlastnameassignment.doc).

Late assignments: Conflicts with an assignment deadline should be discussed and resolved before the assignment’s due date. Unexplained late assignments may not be accepted and may result in a failing grade for that assignment. If you are absent on the day an assignment is due and do not make other arrangements to get the assignment to me, it will be considered late.
**Field participation:** You will be assigned to an elementary classroom and need to arrange to be at the school for 4 hours each week within your arranged field time that balances both science and social studies participation. *Since this course is focusing on teaching science and social studies, it is important that you and your CT talk about how you will be able to observe and participate in science and social studies during these blocks the majority of the time.* While we don’t expect that you will be able to observe science or social studies during every visit (for example, state testing at the beginning of the year will interrupt some of the scheduling), but that you get the opportunity to observe science and social studies as much as possible in your placement classrooms.

In the classroom, you will be observing and taking notes, working with small groups, teaching lessons, talking with students, trying out some assessment tools, and participating in the routines of the classroom at various times across the semester. Field assignments connected to the classroom will be discussed in class, and you are encouraged to discuss them with your instructor as needed. On occasions when you do not have a specific assigned task to complete in the classroom for a field assignment, it is your responsibility to arrange with your collaborating teacher how you will participate in the classroom. This will likely require communicating.

**Attendance during class and field time:** The program will use a field log form to keep track of your attendance in your field placement classroom. The folder should be accessible to both the CT and you. You are responsible for recording your attendance (both arrival and departure time) for each day present in the classroom, and noting ways in which you were involved in the classroom each time you go. The CT will be asked to comment on your attendance record as an element of performance and professionalism. If you must be absent, you are responsible for notifying the CT in advance and for making up all field absences after the first absence. If you are unable to attend school, you need to call your collaborating teacher *in advance.* You must also notify your instructor and the pre-internship coordinator, Andrea Kelly, regarding the date and reason for your absence. Do not rely on your peers to relay messages—make sure you communicate directly with your collaborating teacher.

Regular on-time attendance and full participation in class is critical to learning. Of course, illness and other emergencies cannot be avoided. If you are unable to attend a class session, you must call or email the instructor in advance. Similarly, you must call your collaborating teacher in advance if you are unable to meet a field visit commitment. You will make up all field absences. If you are unable to attend school, you need to call your collaborating teacher in advance. Do not rely on your peers to relay messages—make sure you communicate directly with your CT.

This course is planned on the assumption that you will come on time and come prepared to participate. The instructor reserves the right to adjust your grade as a response to absences or excessive tardiness. In accordance with the Teacher Preparation Program's Professional Conduct Policy, attendance and punctuality in class meetings and field experiences are critical to your success in this course and in the Program. It is your responsibility to familiarize yourself with the policy that is on the web at [http://www.educ.msu.edu/students/undergraduate/professionalconduct.htm](http://www.educ.msu.edu/students/undergraduate/professionalconduct.htm). In the case of recurring absences or tardiness, your Pre-internship Coordinator (Andrea Kelly) will be notified and you may be required to attend a meeting regarding your attendance. More than two absences in class or in your field placement will affect your grade and may result in a failing grade for the course.
**Professional responsibilities in the field:** In the schools, the MSU teacher preparation program and the school staff expect you to dress, act, and talk in professional ways. You will be viewed and judged as another adult by students, parents/guardians, teachers and others in the building. Short skirts, midriff shirts, baggy pants, hats and other casual or revealing clothes are not appropriate. Ask your collaborating teacher about the norms of dress in your building regarding appropriate professional attire.

We also expect you to be respectful of children and school staff and mindful of the need for learning and teaching to go on without unnecessary interruption. Be sure to be polite and considerate of all adults and children in the building including the principal, custodians, secretary, paraprofessionals, etc. See the teacher preparation program professional conduct policy that reiterates these expectations for teacher candidates at the end of this syllabus.

**Confidentiality about others:** Your field experiences are an important part of your learning and you will be discussing them in this course. Just as teachers are expected to respect the privacy and dignity of the children and families with whom they work, so we expect you to use discretion. In casual conversations or social situations, do not relate stories from classrooms or schools that may be embarrassing to teachers or students or that include sensitive information about a child or family. When discussing classroom situations in class, do so carefully. Use a fictitious name for the student involved. Mask the name of a student on any written or visual work shared in class or used in an assignment. When discussing teaching practice you have observed in the field, be mindful of maintaining a tone of professional courtesy.

Use pseudonyms and screen or mask identifying information when reporting interviews or discussions with children or youth or adults. If an assignment requires you to interview an adult other than your CT, you should clearly state or give the interviewee, in writing, the purpose of the interview and the uses you will make of the material.

Always ask permission of the classroom teacher to make photographs, videotapes, or audiotapes of students. Occasionally there are circumstances that require a student’s whereabouts to be kept secret and photographs may not be allowed. Some schools and districts require written permission from parents/guardians for taking any photographs, videotapes, or audiotapes. Be sure to check with the classroom teacher on what is needed.

**Teacher Preparation Program Policies**

In accordance with the Teacher Preparation Program’s professional conduct policy (http://www.educ.msu.edu/students/undergraduate/professionalconduct.htm), the instructor will notify the Undergraduate coordinator of recurring absences or tardiness, and you may be required to attend a meeting regarding your attendance. More than a total of 2 unexcused absences (e.g., without timely communication with the instructor and/or the collaborating teacher, or absences without adequate reasons) in class or in the field is cause for concern. Recurring absences or tardiness will put your recommendation for continuation in the program in jeopardy.

**Grading for TE 401:** In order to pass this section of TE 401, each subject matter must be passed with a 2.0 or above. Also, a satisfactory report must be received from the teachers in the field experiences during TE 401. If you receive less than a 2.0 in either subject matter section of
this course, the lower grade will be the final grade for the course. The entire course would need to be repeated in order to continue in the Teacher Preparation Program.

**The grade "incomplete":** MSU policy is that "the 'I' (incomplete) grade may be given only when the student (a) has completed at least 12 weeks of the semester, but is unable to complete the class work and/or take the final examination because of illness or other compelling reasons; and (b) has done satisfactory work in the course; and (c) in the instructor's judgment can complete the required work without repeating the course." For the entire grading policy at MSU, please visit: [http://www.reg.msu.edu/read/UCC/Updated/geninfogenpro.pdf](http://www.reg.msu.edu/read/UCC/Updated/geninfogenpro.pdf). Since each course from TE 301 on is a prerequisite for each succeeding course, incompletes must be cleared before the first meeting of the succeeding course. Therefore, it is wise to avoid Incompletes entirely.

**Academic honesty and integrity:** We assume that the student is honest and that all course work and examinations represent the student's own work. Violations of the academic integrity policy such as cheating, plagiarism, selling course assignments or academic fraud are grounds for academic action and/or disciplinary sanction as described in the university's student conduct code. Incidents of plagiarism are taken very seriously and will be pursued. Students are strongly cautioned not to copy any text verbatim on class quizzes, tests, reports, projects, or other class assignments without using appropriate quotations and source citations. For University regulations on academic dishonesty and plagiarism, refer to: [http://www.msu.edu/unit/ombud/plagiarism.html](http://www.msu.edu/unit/ombud/plagiarism.html)

**Problem solving:** Syllabi should contain a statement that directs the student to address problems that might arise by first contacting the course instructor. If the problem is not resolved, a syllabus should list the name of the next most appropriate contact person who is usually the Team Coordinator.

**Accommodations for disabilities:** It is Michigan State's policy not to discriminate against qualified students with documented disabilities in its educational programs. If you have a disability-related need for modifications in this course, contact your instructor and the Resource Center for Persons with Disabilities. Instructors should be notified as early in the semester as possible. For an appointment with a counselor, call 353-9642 (voice) or 355-1293 (TTY). Instructors in the course may request a VISA Form (Verified Individual Student Accommodations Form) from a student requesting services. The OPHS website is at [http://www.rcpd.msu.edu/Home/](http://www.rcpd.msu.edu/Home/).

**Counseling Center:** Even normal, capable, intelligent, and reasonable persons like the members of this class sometimes face situations and problems that they find difficult to deal with by themselves. TPP's instructors or cluster leaders might be able to help. Also, MSU has an Office of Student Affairs and Services, with a Counseling Center, for which the phone number is 355-8270. The Center is at 207 Student Services Building. Website: [http://www.couns.msu.edu/](http://www.couns.msu.edu/)

**Writing Center:** Teachers are models and coaches of writing for their students, and must communicate effectively in writing with colleagues, parents, and others. For those reasons, teacher candidates are expected to write effectively and conventionally. If you need more help in meeting those expectations than you can get from your instructors and other teacher candidates,
try the College of Education Office of Student Writing Assistance (OSWA), 513 F Erickson Hall, phone 517-432-0425 or email campbell@msu.edu. In addition, the Writing Center at 300 Bessey Hall, 432-3610 is available. Grammar Hotline: 432-1370. Website: http://writing.msu.edu/

Additional Policies You Should Know About

The following policies have been adopted by the Teacher Preparation Program or MSU and are included as links on Elementary Program website.

**Professional Conduct Policy:**
http://www.educ.msu.edu/students/undergraduate/professionalconduct.htm
The teacher preparation program has a professional conduct policy for teacher candidates. It addresses such matters as attendance, professional communication, and confidentiality in discussions of or writing about school personnel.

**Rights and Responsibilities of Students:** http://www.vps.msu.edu/SpLife/afri.htm MSU students' rights and responsibilities are an important counterpart to MSU's Code of Teaching Responsibility (see Elementary Program website).
A description of the course activities and assignments is provided below.
# TE 401 Elementary Science – Course Schedule

This is a *tentative* schedule of the ideas we will explore over the duration of the course. We may make changes over the semester if opportunities for learning arise that we should not miss. We may also need to change our plans to accommodate events and situations that arise at your placement sites. All changes will be announced in class and posted to our ANGEL website.

<table>
<thead>
<tr>
<th>FOCUS QUESTIONS AND PEDOOGICAL IDEAS</th>
<th>FIELD BASED ACTIVITIES</th>
<th>IN CLASS ACTIVITIES</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Sept 2) Who are we? What are our images of science? What have been our experiences in science as learners? How do we want to teach science?</td>
<td>Getting acquainted activity Overview of the course Peer surveys on teaching and science learning Video analysis of Sister Gertrude Hennessey’s science teaching Review of syllabus</td>
<td>Science exploration Investigating Plants</td>
<td>All assignments should be completed prior to class meeting. Assignments should be uploaded under the ‘Assignments’ folder on the TE 401-Science ANGEL website, unless otherwise specified.</td>
</tr>
<tr>
<td>2 (Sept 9) What is science? What does it mean to do science? Why should we teach it?</td>
<td>Review course assignments Reflection on readings Thinking ahead about field trip preparations</td>
<td>Krajcik et al. - Why teach science? Alberts - Some thoughts of a scientist on inquiry</td>
<td>Science teaching philosophy draft [upload to ANGEL]</td>
</tr>
<tr>
<td>3 (Sept 16)</td>
<td>What does it mean to bridge informal and formal science learning?</td>
<td>Will be provided with the field trip guide at the MSU Children’s Gardens</td>
<td>Field trip to MSU Children’s Gardens Meet at B102 Plant &amp; Soil Sciences, the Curiosity Classroom</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>4 (Sept 23)</td>
<td>What science do we need to teach students?  How do we want to teach science?  (Unpacking the learning goals and standards and models of teaching: didactic, discovery, conceptual change, and communities of learners)</td>
<td>Reflect on field trip – Post on wonder wall  Reflection on readings  <strong>Science exploration</strong>  <strong>Investigating Plants</strong>  (continued)  Critical examination of Michigan standards for science  Work session on identifying learning goals (EPE table) - Changes in matter</td>
<td>Roth - Neighborhood of science  Bybee - Teaching science as inquiry</td>
</tr>
<tr>
<td>5 (Sept 30)</td>
<td>How should we teach science? (Models continued – guided inquiry)  Effective approaches.</td>
<td>Observe &amp; assist your CT in the classroom  Find out science topic that you could teach for the weeks of November 4th or November 11th and find relevant curriculum materials from your CT and on-line</td>
<td>Reflection on readings  <strong>Science exploration</strong>  <strong>States of Matter</strong>  Continue working session on identifying learning goals (EPE table)  Introducing a science notebook</td>
</tr>
<tr>
<td>Week</td>
<td>Topics</td>
<td>Assignments</td>
<td>Readings</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>6  (Oct 7)</td>
<td><strong>Best practice methods:</strong> How can we teach science for all children? Students of diverse needs – English language learners, special education and gifted  &lt;br&gt; Draft questions and prompts for ‘Science Talk’ with small groups of students  &lt;br&gt; <strong>Field trip to Bennett Woods Elementary:</strong> Observing experienced classroom teachers’ science lesson  &lt;br&gt; Exploring ‘Science Talks’  &lt;br&gt; Discuss readings</td>
<td><strong>Draft of unit identification and learning goals assignment due</strong></td>
<td>Rosebery &amp; Warren –TS ELL Chapters 5 &amp; 6  &lt;br&gt; Calabrese-Barton – Anti-deficit perspective</td>
</tr>
<tr>
<td>7  (Oct 14)</td>
<td>Best practice methods (continued): How can we support productive conversations in the classroom?  &lt;br&gt; Conduct and analyze ‘Science Talk’ this week or next week  &lt;br&gt; Observe/Assist your CT in the classroom  &lt;br&gt; <strong>Science Exploration: States of Matter (continued)</strong>  &lt;br&gt; Share draft questions for ‘Science Talks’ in collaborative groups  &lt;br&gt; Work session on designing effective activity sequence and post-assessment items</td>
<td><strong>Bring draft questions for ‘Science Talks’ to class</strong></td>
<td>Rosebery &amp; Warren –TS ELL Chapters 1-3  &lt;br&gt; Simpson – Collaborative conversations  &lt;br&gt; Observe examples of science talk online: <a href="http://msu.edu/~scied/Videos.html">http://msu.edu/~scied/Videos.html</a></td>
</tr>
<tr>
<td>8  (Oct 21)</td>
<td>How do we use best practices in our lesson plans and how can we effectively use assessments of student science learning?  &lt;br&gt; Conduct and analyze ‘Science Talk’ this week.  &lt;br&gt; Begin to outline activity sequence and draft lesson plan  &lt;br&gt; Observe/Assist your CT in the classroom  &lt;br&gt; <strong>Share experience</strong>  &lt;br&gt; Reflection on readings  &lt;br&gt; Peer-sharing of post-assessment items and activity sequence  &lt;br&gt; Work session on curriculum materials analysis</td>
<td><strong>Draft activity sequence and post-assessment due</strong></td>
<td>Koch – What’s the Big Idea?  &lt;br&gt; Hein &amp; Price – Assessments in the context of teaching  &lt;br&gt; <a href="http://msu.edu/~scied/Videos.html">upload onto ANGEL</a></td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Activity</td>
<td>Reading/Resource</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Oct 28 | How can we effectively manage our classrooms? A classroom management follow-up. How can we effectively incorporate technology into the classroom? | Continue to refine lesson plan  
Observe/Assist your CT in the classroom | **Science Exploration:**  
Exploring Sound  
Work session on planning lessons for field-based teaching  
Share observations in science notebook  
Weinstein & Mignano – Chapter 9 on managing group work | Bring draft lesson plan to teach science  
Final science talk assignment due  
[upload to ANGEL]  
Final curriculum materials analysis assignment due  
[upload to ANGEL] |
| Nov 4  | How can we integrate science across other content areas?             | Teach lesson across 2 days in school                                        | **Field trip to Zoo**  
**Science Exploration:**  
Exploring Sound (continued) | Reading on Social Studies  
Straits & Nichols – Literature circles |
| Nov 11 | How can we effectively incorporate technology into the classroom?   | Teach lesson across 2 days in school                                        | **Science Exploration:**  
Exploring Sound (continued)  
Conferencing for teaching  
Planning for analysis of student learning and field-based teaching assignment |  |
| Nov 18 | How can we effectively use assessments of student learning?         | Observe/Assist your CT in the classroom                                     | **Science Exploration:**  
Exploring Sound (continued) or Weather  
Work session on analysis of teaching and results from | Readings on Learning Technologies  
Exploring learning technologies  
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Topic</th>
<th>Resources</th>
<th>Assignments due on December 2:</th>
<th>Assignments due on December 9:</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 (Dec 2)</td>
<td>What is my specific philosophy on teaching science in the elementary classroom? How do I plan to teach science in my classroom?</td>
<td>Observe/Assist your CT in the classroom</td>
<td>Science Exploration: Weather (continued)</td>
<td>Work session on final project</td>
<td>Revised science teaching philosophy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Co-teaching mini science lessons</td>
<td>Comparison of different elementary school science curricula—e.g., STC, Battle Creek, GEMS, FOSS, &amp; Harcourt Science</td>
<td>o Final project</td>
</tr>
<tr>
<td>14 (Dec 9)</td>
<td></td>
<td>Observe/Assist your CT in the classroom</td>
<td>Science Exploration: Weather (continued)</td>
<td>Co-teaching mini science lessons</td>
<td>o Revised science teaching philosophy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Comparison of different elementary school science curricula—e.g., STC, Battle Creek, GEMS, FOSS, &amp; Harcourt Science</td>
<td>o Final project</td>
</tr>
<tr>
<td>FINAL (Dec 13, 7:45-9:45)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(FINALS WEEK – Final Project Presentations)