

SIED 5325: Inquiry Science Education in Bilingual Settings (CRN: 33413)
Summer 2015 (June 8 –July 2)
University of Texas at El Paso
Teacher Education Department

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Please email me to set up an appointment or to arrange a phone conversation.

Course Description

This course provides a review of pedagogical content knowledge (PCK) methodologies as implemented in K-12 learning settings with emphasis on English Language Learners (ELLs) classrooms. This course also offers a review of scientific inquiry as an instructional methodology in K-12 classrooms, that is aimed to support both content and language development in bilingual communities. Students will learn to develop curriculum using instructional models such as sheltered instruction, and the 5E Model. In this course, students will participate as a teacher, researcher, and student while they reflect on how a student-centered learning setting can transform their classroom activities benefiting ELLs. The course is organized around lecture notes, video-lessons, threaded discussions, readings, writing projects, and use of sheltered Instruction. Grades are derived from participation and a mastery of basic concepts as indicated by group projects and individual activities, and student reading and writing exercises. The class includes research-based principles in science learning and second language acquisition.

Course Procedures

This class is a master's level class in science education, and it is expected that students manage their time and complete all the required classroom material. The class will be facilitated in Moodle through the University of Texas at El Paso and can be accessed through the My UTEP Web Site (<http://my.utep.edu>--click on the big orange banner) and will be conducted as an online class. All class interactions will be done online and all materials for the semester will be delivered and received in through the course platform. Be sure to read all the lecture note materials thoroughly and to continually consult the course schedule in order to keep up on all information associated with this online class.

There will be weekly class notes that will be posted no later than Monday morning of each week. The weekly class notes will appear as a file in the Lectures section of our class in Moodle. It is the responsibility of each student to follow this material and integrate it into your individual class material assignments.

You will need to examine and understand the environment of your class in Moodle and the location of all class materials. It is recommended that you log in with great regularity in Moodle to look for announcements, class notes, discussion posts, a detailed description of course assignments, email tools, and spaces for collaboration.

Required Textbook

Carr, J., Sexton, U. & Lagunoff, R. (2007). Making science accessible to English learners. San Francisco: WestEd. ISBN 978-0-0914409-40-3.

Other required readings will be available in the course platform in PDF format. The Adobe Acrobat reader is free and may be obtained at: www.adobe.com. These readings are posted in the 'Readings' folder in the each week's content area.

Suggested Online Sources

- Center for Applied Linguistics: <http://www.cal.org/>
- Institute for Inquiry: <http://www.exploratorium.edu/ifi/>
- Jim Cummins' website: <http://iteachilearn.org/cummins/>
- NABE Journal of Research and Practice: <http://www.uc.edu/njrp>
- National Clearinghouse for English Language Acquisition and Language Instruction and Educational Programs: <http://www.ncela.gwu.edu/>
- Stephen Krashen's website: <http://sdkrashen.com/>

Technology Requirements

- Each participant must be able to use their UTEP Moodle account. You MUST have both a UTEP email address and password to take this course.
- You must have access to UTEP email and Moodle prior to the beginning of the second week of the course. If you do not have one yet, you may apply for your UTEP email account, login, and password from a form available online at: <https://newaccount.utep.edu>
- The papers submitted in class must pass the expected level of originality and will be checked using the www.turnitin.com service. You can also check your own papers before submitting them for a grade to make sure your work is original and will not get you in trouble.

Technical Assistance: The University of Texas at El Paso offers complete technical information and help desk support at: <http://issweb.utep.edu/techsupport/>.

Professional Expectations

Consider the virtual interactions in this class as a meeting with colleagues in your field and a great opportunity to exchange ideas. Being well prepared and participating in class projects and discussions are key parts of professional behavior. Make a commitment to:

1. *Be prepared.* Interact and complete your assignments in a timely manner.
2. *Check the Moodle* course platform regularly. Find each week's class notes posted in the course content area (Lecture Notes folder)

3. *Participate.* In this learning environment we need to 'hear your voice.' We specially need to hear your personal comments, your reactions to what you have read, plus your own experiences. All of this input adds to the shared learning, and the sense of community in our course.
4. *Inform* your instructor and teammates (if necessary) when you cannot participate in class or group projects, or you run into difficulties completing your tasks.
5. *Be courteous* and honest in communicating with others that shows respect and sensitivity to cultural, religious, sexual, and other individual differences among all class members. Any derogatory or inappropriate comments are unacceptable and subject to the same disciplinary action that they would receive if they have occurred in the physical classroom. If you have concerns about something that has been said, please let your instructor know immediately.
6. *Provide constructive feedback* that helps your teammates and the instructor improve their performance, and appreciate it when they provide you with the same.
7. *Be persistent.* If you run into difficulties, do not wait! Contact your instructor (see Contact Information above), or check with one of your classmates through Moodle email section (My Mail). Most problems are easily solved but we have to hear from you before we can help. Instructor's responses to your questions will be made available to the whole class via the *Virtual Office* section in the *Communication Forum* of the course platform.
8. *Use correct English.* Online learning environments are not the place for net acronyms.
9. Make sure that your answers to course assignments (except for group projects) will be your own work.

Course Goals

Successful completion of this class will assist graduate students in meeting the following goals:

1. To engage in class discussions and assignments that requires the integration of skills in content development and content delivery in ELLs classrooms.
2. To apply knowledge of, and guides students to understand the processes of scientific inquiry and the role of inquiry in the teaching of science in culturally and linguistically diverse classrooms.
3. To identify and integrate ELLs' personal experiences and family backgrounds, relevant to science, with academic content.
4. To implement a variety of instructional strategies and resources to meet the diverse needs of all learners.
5. To identify and articulate standard-based science instructional strategies by making research-based decisions, exhibiting leadership, and consulting with colleagues in your field.
6. To analyze and synthesize an understanding of course material in both classroom and online environments through multiple classroom interaction strategies.

Student Learning Outcomes

It is expected that by the end of the course, the successful graduate student will be able to:

1. Discuss differences in first and second language acquisition.
2. Identify principles of second language acquisition in classroom settings.
3. Outline strategies for modifying content lessons to accommodate English language learners.

4. Demonstrate proficiency in the use of the 5E Instructional Model as a format for lesson planning.
5. Apply knowledge of, and guide students to understand and practice the processes of scientific inquiry and the role of inquiry in science learning and teaching.
6. Become proficient in the curriculum alignment process.
7. Address the Texas Essential Knowledge and Skills (TEKS) for appropriate grade level.
8. Use the discourse of our discipline (science education) in a writing project to address issues that are of interest in the *teaching and learning of science with ELLs*.

Assessment of Student Learning Outcomes

Assignment	Assessment of learning outcomes
1. Growth Essays	Learning outcomes: 1, 2, 7 and 8.
2. Science Lesson	Learning outcomes: 1, 2, 4, 5, 6, 7, and 8.
3. Points of Most Significance (POMS)	Learning outcomes: 1, 2, and 7, and 8.
4. Threaded Discussions	Learning outcomes: 1, 2, 3, and 7, and 8.

Outline Activities – Due Dates Summer 2015

Assignment	Date Open	Due Date—Closed
<i>Growth Essays (45%) (IA)</i>		
Growth essay 1	June 8 at 7:00 AM	June 14 at 11:55 PM
Annotated bibliography	June 22 at 7:00 AM	June 28 at 11:55 PM
Growth essay 2	June 29 at 7:00 AM	July 5 at 11:55 PM
<i>Science Lesson (25%) (IA/GA)</i>		
Lesson Outline and Appreciative Interview	June 15 at 7:00 AM	June 21 at 11:55 PM
5E lesson submission for peer review	June 22 at 7:00 AM	June 28 at 11:55 PM
Final submission	June 29 at 7:00 AM	July 5 at 11:55 PM
<i>Points of Most Significance (POMS) (IA) (15%)</i>		
POMS sample 1(no points earned).....	June 9 at 7:00 AM	June 15 at 11:55 PM
POMS 1.....	June 16 at 7:00 AM	June 22 at 11:55 PM
POMS 2	June 23 at 7:00 AM	June 29 at 11:55 PM
POMS 3	June 30 at 7:00 AM	July 6 at 11:55 PM
<i>Threaded Discussion (TD) (IA) (15%)</i>		
Threaded Discussion 1	June 8 at 7:00 AM	June 14 at 11:55 PM
Threaded Discussion 2	June 15 at 7:00 AM	June 21 at 11:55 PM

GA: group assignment; IA: Individual assignment

Guidelines

- **Dates Due – Open:** Means that a discussion or written assignment link is available.
- **Dates Due – Closed:** Means that a discussion or written assignment link is closed and no longer available.
- **It is important to pay attention to all due dates and to manage your time and meet the requirements of this online graduate class as outlined in the course syllabus.**

Grading Criteria

The course will be assessed based on the following criteria:

Assignment	Total Points	Percentage of Grade
Growth Essays (IA) Essay 1 (20 points) Essay 2 (60 points)	80 points	45%
Science Lesson (IA/GA) Lesson outline (40 points) Lesson submission (60 points)	100 points	25%
POMS (IA) <i>You are required to submit two POMS.</i>	10* points	15%
Threaded Discussions (IA) (5 points each)	10 points	15%
Total	200 points	100%

**This score depends on the POMS type you use in your submissions. For instance, perfect scores on two type III POMS will result in 10 points (Type I= 3 pts; Type II= 4 pts; Type III= 5 pts). In case you participate in the three submissions; your instructor will use the best two POMS scores in the calculation of the grade for this assignment.*

Grades

Overall grading will be A-F, points weighted by percentages. All work is expected to be clearly written (and word-processed), reflect thoughtful response to the assignment guidelines, and be of high quality. Be sure to consult the assignment rubrics and project samples posted in the course platform.

A = 90-100% D = 60-69.9%
B = 80-89.9% F = BELOW 60% C = 70-79.9%

Description of the Assignments (See assignment rubrics in the Rubrics folder)

1. Growth Essays: In this assignment you are required to demonstrate the ability to:

- Use the discourse of our discipline (*science education*) and communicate that field's subject matter to academic and/or professional audiences.
- Make effective use of multiple drafts, of revision and editing, of computer technology, of peer and instructor comments, and of collaboration in the achievement of writing that shows understanding of written standards in a discipline and/or interdisciplinary field.
- Address issues that are of interest to you in the teaching and learning of science with ELLs and complete a substantial writing project that requires appropriate research skills.
- Observe the conventions of spelling, grammar, structure, punctuation, and documentation expected in disciplinary, interdisciplinary, and/or professional contexts.

Essay 1: My autobiography as a science and [English] language learner

Essay 2: My current views about teaching and learning science in English (L2)

Samples of these essays will be available in the course platform.

Annotated Bibliography: The bibliography will be integrated in your Growth Essay 2 and should contain an entry for each document you have found useful for your essay. This submission should include at least five entries. The entry will consist of two parts:

1. A citation in APA Style for the document (journal article, conference paper, web page, book). Please let me know if you need assistance with this citation style.
2. An annotation consisting of a brief (~100 word) descriptive and evaluative paragraph. The purpose of the annotation is to:

A. Summarize the findings or key points of the document.

B. Evaluate the document. The evaluation might include, but is not limited to, a discussion of these points:

- *Date*—Is the work current? If not, how does the age of the document impact the relevance, accuracy, or scope of the information contained in the document?
- *Contribution*—Explain how this work illuminates your bibliography topic. Has it changed how you think about your project?

The writing assignment must follow the American Psychological Association (APA) style format. APA resources are available online (see <http://www.apastyle.org/faqs.html>) as are tools to aid in creating bibliographies

(See <http://citationmachine.net/>). If you are already familiar with the 5th edition, visit the following website for a summary of changes in the 6th edition.

<http://www.apastyle.org/manual/whats-new.aspx>

The essays submitted in class must pass the expected level of originality and will be checked using the www.turnitin.com service.

2. Science Lesson: The 5E lesson assignment (no more than 3 students per group/or individually) should be appropriate for the classroom in which you teach or would like to teach. You will be given an opportunity to interact with at least one ELL, gather background information on your student/s by conducting an appreciative interview (AI), outline your lesson, participate in critiquing, revising, and improving your own and others' work. The lesson plan should *identify a language proficiency level*.

3. Points of Most Significance (POMS): Adapted from McComas (2002), POMS submissions are based on *[only] one* assigned reading from each week and represent what *you* (not the author) think are the most important points made in the paper. This strategy will help get the most out of the text and be ready to contribute to class discussions and writing assignments. Each POMS will be based on (i) a single reading and (ii) on one POMS type (Summary, Synthesis or Application—your choice). Note that you are expected to submit two POMS. If you participate in each opportunity, the best two scores will be use in the calculation of your grade for this assignment.

There are three types of POMS, each with its unique point value.

- *I- Summary*: Reflects major idea(s) of a paper, or set of papers, within the current reading topic (3 pts).
- *II-Synthesis*: States how you think the major idea(s) of a current reading or set of readings relate to the major idea(s) discussed in previous readings or class meetings (4 pts).
- *III-Application*: States a major implication for science teaching and learning in linguistically diverse classrooms (*not* directly provided by the author) that you draw from a given reading and discuss the means by which the implication can be put into practice (5 pts).

POMS' Rules

Rule 1: Each individual POMS statement is to be no more than 55 words long.

Rule 2: For each POMS indicate the type (I: Summary, II: Synthesis or III: Application) you intended to write.

Rule 3: Include in the POMS the title of the reading and its author/s. (names and numbers will not be counted for the 55 words maximum).

Rule 4: POMS should be submitted by the assigned week (no later than Sunday at midnight) on the course platform only (Blackboard). Include your name and the reading related to the POMS. Please contact me *ahead of time* if you have problems submitting your POMS on Blackboard.

Rule 5: ALL POMS (except Sample POMS) must include a reference to AT LEAST ONE of the readings from previous weeks that support or refute a position with which you would like to draw comparisons or conclusions.

Rule 6: Five points will be lost with each non-submitted POMS. You are required to submit two POMS (Week 2, 3, and 4).

McComas, W. (2002). A thematic introduction to the nature of science: The rational and content of a course for science educators. Kluwer Academic Publisher. Dordrecht, The Netherlands.

Here is an example of a POMS submission:

	Week 2 Type II	Week 3 Type II	Week 4 Type III	Total Points (%)
Points earned	2.5/4 pts	3/4	4.5/5	7.5/9 (12.5/15%)

Best two scores

4. Threaded Discussion on Blackboard: There will be two Threaded Discussion (TD) prompts available (see course calendar), each posted on Monday morning by 7:00 AM and open until Sunday at 11:55 PM. Each contribution will be awarded 0, 2, 3, or 5 points based on the complexity and thoughtfulness of your comments. For example, 2 excellent participations at 5 points each can satisfy the entire 10 total points.

Do not post your responses to the discussion board as attachments! Please type directly or copy and paste the text into the discussion boards.

Academic Policies

Attendance Policy: Attendance is taken by monitoring your work and participation online. You are responsible for doing all the work and reviewing the online lectures every week.

Assignment Submission: Your assignments are due on the scheduled day and time; submit them according to the prescribed format (e.g., written report). Late work will not be accepted for full credit unless you have evidence of extenuating circumstances. Assignments not turned in will receive a 0. I will only agree to grade late work for the first week following a due date, deducting 25% off the total grade. No assignments will be accepted past one week late. Plan carefully to ensure you meet the deadlines. If you wait until the last minute, things that can go wrong often do. Your computer will crash, the internet connection stops working, etc. Create your time management plan and stick to it, so you can get everything done on time.

Make-up Work: There are no make-up assignments unless in case of serious bodily harm or death in family. You must bring a document issued by a health service provider or institution in order to turn in late work or make up an exam.

Assigned Reading Material: Readings will be assigned for each week. You will be responsible for reading and understanding these materials.

Plagiarism: Cheating is unethical and not acceptable. Plagiarism is using information or original wording in a paper without giving credit to the source of that information or wording; it is also not acceptable. Do not submit work under your name that you did not do yourself. You may not submit work for this class that you did for another class. If you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UTEP catalog policy. Refer to <http://www.utep.edu/dos/acadintg.htm> for further information.

Multiple Submissions: When turning in assignments, students may not resubmit work done for other courses. No credit will be given for a resubmission of a project or paper given in another class.

Incomplete Grades: An incomplete may be given if a student provides evidence of a documented illness or family crisis that precludes successful completion of the course.

Students with Disabilities: I will make any reasonable accommodations for students with limitations due to disabilities, including learning disabilities. Please see me personally before or after class in the first two weeks or make an appointment, to discuss any special needs you might have. If you have a documented disability and require specific accommodations, you will need to contact the Disabled Student Services Office in the East Union Bldg., Room 106 within the first two weeks of classes. The Disabled Student Services Office can also be reached in the following ways:

E-mail: dss@utep.edu

Web: <http://www.utep.edu/dsso>

Phone: (915) 747-5148

Fax: (915) 747-8712

Course Schedule and/or Assignment Changes: The course instructor reserves the right to adjust the course syllabus or change assignments as needed. While every effort will be made to adhere to the calendar and the course outlines, there will undoubtedly be changes due to unexpected situations or pacing that may arise during the semester. Every attempt will be made for advance 'warning.' These modifications will be based on the specific needs of all the students in the course, but not to exceed difficulty or the due dates of the originally proposed assignment.

Communicating Effectively Online: When we talk face-to-face, we expect other people to observe certain rules of behavior. The same is true online. Here are a few pointers to help you communicate more effectively via e-mail and discussion boards:

- Clearly summarize the contents of your message in the subject line of your e-mail AND your discussion board postings.
- Avoid using all capital letters. USING ALL CAPS MAKES IT LOOK LIKE YOU ARE SHOUTING! IT'S ALSO MORE DIFFICULT TO READ.
- Avoid using sarcasm in your postings and e-mail messages. Sarcasm does not translate well in the online world. If you have a dry sense of humor, use smiles :) to defuse what could be constituted as an abrupt message (but don't over use them! :)).
- Think before you push the "Send" button. During group discussions, did you clearly say what you meant to say? How will the person on the other end read the words? While you can't anticipate all reactions, do read over what you've written before you send it.

Course Calendar:

Week	Date	Topic/Activity	Assignments Due
Part I: Inquiry and Language Learning			
1	June 8-14	<ul style="list-style-type: none"> • Syllabus review: Read the course syllabus and list of activities and assignments. Please, send me the questions you may have about activities and assignments. • Principles of Scientific inquiry • The academic language of science • Who are English language learners and why is it important to design instruction specifically for them? • The Nature of Science 	<ul style="list-style-type: none"> • Introductions <p>Submit the Student Information forms <i>(no points earned)</i></p> <p>Read:</p> <ul style="list-style-type: none"> • Colburn: <i>Inquiry primer</i> • Short, Vogt & Echeverria <i>Ch. 1</i> • NCTE: <i>English Language Learners</i> • McLaughlin: <i>Myths and misconceptions about second language learning.</i> • Rodriguez & Ramos: <i>Conversation with Krashen.</i> • McComas: <i>Keys to teach the nature of science (NOS).</i> [Take the NOS quiz before doing this reading—no points earned. Quiz available in the Assessment section] <p>POMS Sample Threaded Discussion 1 Growth Essay 1</p>

Part II: Science Lesson Design			
2	June 15-21	<ul style="list-style-type: none"> • The 5E Instructional Model • Exploring language in the context of content. • The language of science • 5E lesson samples • Sheltered instruction 	<p>Read:</p> <ul style="list-style-type: none"> • <i>Bybee: The 5E Model</i> • Carr, Sexton, & Lagunoff, Ch. 1, 3 & 4 • Crowther et al: <i>Academic vocabulary instruction within inquiry science.</i> • Cummins: <i>BICS and CALP</i> • Bautista & Castaneda: <i>Teaching science to ELLs, Part I.</i> • McCall: <i>Frontloading for ELLs.</i> <p>POMS1 Threaded Discussion 2 5E Lesson Outline</p>
Part III: Multicultural Education in the Science Classroom			
3	June 22-28	<ul style="list-style-type: none"> • Multicultural science education • Assessment strategies • Collaborative activity: Sharing of lesson and writing projects. • Strategies for planning and teaching <p><i>Resources:</i></p> <p>-Read Gallard's paper at: http://www.narst.org/publications/research/multicultural.cfm</p> <p>-Cultural Inquiry Process http://classweb.gmu.edu/cip/r/r-ind.htm</p>	<p>Read:</p> <ul style="list-style-type: none"> • Gallard: <i>Creating a multicultural learning environment in science classrooms.</i> • Carr, Sexton, & Lagunoff, Ch. 5, 6 & 7 • Armon & Morris: <i>Integrated assessment for ELLs.</i> • Dong: Powerful tools for ELLs • Quinn, Lee & Valdés: Language demands and opportunities in relation to the NGSS for ELLs. <p>POMS 2 Annotated bibliography Submit 5E lesson for peer review APA Resources for academic writing at the OWL (Purdue): http://owl.english.purdue.edu/owl/resource/560/01/</p>
Part IV: Academic Writing and Lesson Documentation			
4	June 29- July 2	<ul style="list-style-type: none"> • Developing final projects: Science lessons and academic writing projects. • Final projects finalized and delivered 	<p>Continue working on your final projects.</p> <p>Science lesson final submission Growth essay 2 POMS 3</p>

Reading List

1. Armon, J., & Morris, L. (2008) Integrating Assessments for ELL. *Science & Children*, 45(8), 49-53.
2. Bautista, N., & Castañeda, M. (2011). Teaching science to ELLs, Part I. *The Science Teacher*, 78(3), 35-39.
3. Bybee, R. W. (2014). The 5E instructional model: Personal reflections and contemporary implications. *Science & Children*, 51(8), 10-13.
4. Carr, J., Sexton, U. & Lagunoff, R. (2007). Making science accessible to English learners. San Francisco: WestEd. ISBN 978-0-0914409-40-3.
5. Colburn, A. (2000). An inquiry primer. *Science Scope*, 42-44.
6. Crowther, D. T., Tibbs, E., Wallstrum, R., Storke, E., & Leonis, B. (2011). Academic vocabulary instruction within inquiry science: The Blended/Tiered approach. *AccELLerate!* 3(4), 17-20.
7. Cummins, J. (1999). BICS and CALP: Clarifying the distinction. ERIC/REC Clearinghouse.
8. Dong, Y. R. (2013). Powerful learning tools for ELLs. *The Science Teacher*, 80(4): 51-57.
9. Gallard, A. J. (2003). *Creating a Multicultural Learning Environment in Science Classrooms: Research Matters*. National Association for Research in Science Teaching.
10. McComas, W. (2004). Key ideas to teach about the nature of science. *The Science Teacher*, 24-27.
11. McCall, J. (2005). Frontloading for ELL learners: Building concepts and vocabulary before reading. Retrieved from www.literacyspecialists.com on 12/05/2012.
12. McLaughlin, B. (1992). Myths and misconceptions about second language learning: What every teacher needs to unlearn. Educational Practice Report No. 5.
13. National Council of Teachers of English (NCTE). (2008). English language learners: A policy research brief produced by the National Council of Teachers of English. Urbana, Illinois.
14. Quinn, H., Lee, O. & Valdés, G. (2012). *Language demands and opportunities in relation to Next Generation Science Standards for English language learners: What science teachers need to know*. Stanford, CA: Stanford University, Understanding Language Initiative.
15. Rodriguez, J. M. & Ramos, F (2009). A conversation with Krashen. *Language Magazine*, 8(5), 28.
16. Short, D., Vogt, M. & Echevarría, J. (2011). The SIOP model for teaching science to English learners. Pearson.