

**CALIFORNIA STATE UNIVERSITY, SAN MARCOS
COLLEGE OF EDUCATION**

EDMS 543 (09) - Teaching Mathematics in the Elementary School (3 units)

CRN 42733 • University Hall 257 • Tuesday 5:30 p.m. – 8:15 p.m.

Fall 2007

Professor: Grace M. Benigno
Phone: 760.750.8518
E-Mail: gbenigno@csusm.edu
Office: University Hall 423
Office Hours: After class or by appointment

College of Education Mission Statement

The mission of the College of Education Community is to collaboratively transform public education by preparing thoughtful educators and advancing professional practices. We are committed to diversity, educational equity, and social justice, exemplified through reflective teaching, life-long learning, innovative research and on-going service. Our practices demonstrate a commitment to student-centered education, diversity, collaboration, professionalism, and shared governance. *(Adopted by COE Governance Community, October, 1997).*

Course Description:

Learning to teach mathematics for understanding and equity is a challenging process. Therefore, students must expect that this course will provide the initial foundation of one's professional development as a teacher of elementary school mathematics. This course engages students in: (1) ongoing, critical reflection upon one's experiences, observations, and beliefs regarding (a) what it means to teach, learn, and do mathematics as well as (b) who can learn mathematics and/or be successful in school mathematics, (2) developing a beginning knowledge base of Standards-based (i.e. problem-based) pedagogical approaches to teaching elementary school mathematics including general instructional techniques and content-specific strategies; (3) examining children's mathematical thinking and reasoning as a means for ongoing assessment of understanding and informing subsequent instruction/teacher questioning and; (4) planning, facilitating, and reflecting on a problem-based mathematics lesson.

Course Prerequisites:

Admission to the College of Education.

Course Objectives:

Students are expected to: (1) deepen one's understanding and appreciation of the mathematics content taught at the elementary level, including number and operations (e.g., number sense), algebra, geometry, measurement, and data analysis and probability; (2) identify and recognize one's own perceptions regarding (a) what it means to teach, learn, and do mathematics and (b) who succeeds in mathematics, and also critically reflect on the implications these understandings may have on one's teaching practice and, consequently, elementary student outcomes (i.e., affective, cognitive/academic, social); (3) actively engage in course readings, activities, discussions, classroom observations, and teaching episodes and critically reflect within and across these experiences with particular attention to implications for mathematics teaching practice and outcomes for children, (4) become familiar with the National Council of Teachers of Mathematics (NTCM, 2000) [*Principals and Standards for School Mathematics*](#) and California Department of Education's (2005) [*Mathematics Framework for California Public Schools*](#), (5) develop a growing facility to appropriately engage, examine, value, assess, and build on children's mathematical thinking from a

thinking from a meaningful, sense-making, and self-reflective standpoint; (6) develop an initial understanding of children's content specific thinking as well as increase one's knowledge and effective use of appropriate pedagogical strategies, professional resources, and educational tools to foster children's conceptual understandings, strategies and reasoning skills in problem-based contexts; and (7) develop/deepen a disposition toward teaching mathematics for understanding and equity and begin to build one's capacity to envision, design, engage in, and reflect upon instructional practice that aims to promote children's mathematical reasoning and support positive outcomes for diverse students.

Required Materials:

- Van de Walle, J. A. (2007). *Elementary and middle school mathematics: Teaching developmentally* (6th Ed.). Boston: Pearson Education, Inc.
- California Department of Education (2005). *Mathematics framework for California public schools: Kindergarten through grade twelve*. Sacramento, CA: Author. This document can be found at <http://www.cde.ca.gov/ci/ma/cf/index.asp>.
- National Council of Teachers of Mathematics (2000). *Principles and standards for school mathematics*. Reston, VA: Author. An overview of this document can be found at <http://standards.nctm.org/> (NCTM members have full access)
- TaskStream account.
- ***Additional readings provided by professor.***

Authorization to Teach English Learners:

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

Student Learning Outcomes -

Teacher Performance Expectation (TPE) Competencies:

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

Primary Emphasis:

- TPE 1a-Subject Specific Pedagogical Skills for MS Teaching (Mathematics)
- TPE 2-Monitoring Student Learning During Instruction

College of Education Attendance Policy:

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

For this class, if you miss 3 class sessions, your highest possible grade will be a B+. If you miss 5 or more class sessions, your highest possible grade is a "C+". Late arrivals and early departures will affect your final grade. Absences do not change assignment due dates. Please discuss with me any extenuating

circumstances that will cause you to miss class *prior* to your absence. Attendance will be taken at each class session.

Students with Disabilities Requiring Reasonable Accommodations:

Students with disabilities who require reasonable accommodations must be approved for services by providing appropriate and recent documentation to the Office of Disable Student Services (DSS). This office is located in Craven Hall 5205, and can be contacted by phone at (760) 750-4905, or TTY (760) 750-4909. Students authorized by DSS to receive reasonable accommodations should meet with their instructor during office hours or, in order to ensure confidentiality, in a more private setting.

Course Requirements:

Participation & Disposition (8%) – Students are expected to actively participate in discussions (i.e., by listening as well as contributing verbally), group work, presentations, and hands-on activities throughout the course. A positive professional disposition includes a willingness to: critically reflect upon and examine one's beliefs regarding mathematics content, teaching, learning, and students (including their families and communities); consider and discuss different ideas, perspectives, and approaches to mathematics pedagogical practice in light of the goals of the course and the Mission of the College of Education; seriously commit to learning and improving one's teaching practice, specifically with an aim to teach mathematics for understanding and equity, and; acknowledge that one's professional development is an on-going learning process, and, hence, participation in this course marks the beginning of one's journey/professional growth. Maintaining a sense of humor and exhibiting behavior and communicative skills that demonstrate tact, respect, and sensitivity toward how one's patterns of participation (or lack thereof) or one's messages may be received (e.g., the degree to which one's participation contributes meaningfully and productively to class discussions or activities) are also important elements of a professional disposition.

Self-Reflection Essays (12%) – **Each student will compose 3 self-reflection essays** (approximately 1-3 pages each in length). Topics for each essay will be discussed in class. The purpose of these essays is to engage students in the professional practice of self-reflection with a specific aim to examine one's own experiences, understandings, and developing notions of what it means to teach, learn, and do elementary school mathematics as well as challenge one's own perceptions of who can learn mathematics and/or be successful in school mathematics

Chapter Reflections & Presentations: Activities for Classroom Practice with Connections to Standards (15%) – **Each student will complete and participate in 2 'Activities for Classroom Practice' presentations.** Working in groups of 4 or 5, each team of students will create a 10-12 minute presentation to include: highlights from the assigned readings and an activity (not already appearing in the Van de Walle text) that reflects the assigned topic/concepts. Presentations should demonstrate the group's knowledge of the chapter content and familiarity with the range of activities presented in the assigned chapter. The group must also present and provide a useful handout/tool to help classmates make sense of the big ideas in the assigned reading (be creative!). (Note: It is not appropriate to simply restate the "Big Ideas" appearing at the beginning of each chapter.) When presenting or engaging the class with the 'new' activity, the group should also (a) make connections back to the chapter, highlighting the specific concepts that the activity helps children to develop, (b) state which standards (by grade level and content/process) the activity addresses (i.e., as stated in the National Council of Teachers of Mathematics (NCTM) & California Department of Education (CDE) documents), and (c) compare/contrast, as appropriate, this activity to those activities presented in the chapter. The group must provide each member of the class (1) a handout/tool that helps to capture/convey the big ideas of the assigned chapter topics, and (2) a handout describing/illustrating the activity shared including highlights, with brief explanations, of what concepts the activity helps children develop and what standards (NCTM & CDE) are addressed.

Chapter Reflections & Presentations: Examining a Lesson for Classroom Practice with Connections to Standards (10%) – **Each student will complete and participate in 1 ‘Examining a Lesson’ presentation.** Working in groups of 4 or 5, students will present a review of a lesson from a professional resource (e.g., Teaching Children Mathematics) to the class that is relevant to the assigned chapter content/topic. The content of the group presentation must: (1) include a summary of the lesson (including grade level, content area); (2) include a statement with brief explanation of which standards (i.e., as stated in the National Council of Teachers of Mathematics & California Department of Education documents) the lesson addresses; (3) clearly articulate to what extent the lesson reflects (3a) teaching for understanding (ch. 3), (3b) planning and teaching through problem-based instruction (ch. 4 & 5), (3c) knowledge of appropriate conceptual development and children’s thinking in the content area (based on the chapter assigned to the group), assessment built into instruction (ch. 7), and (3d) teaching for equity (ch. 7); and (4) suggestions for modifying or strengthening the lesson based on the group’s prior examination of the lesson and reflections shared regarding items under #3 above. Groups will have 12-15 minutes to present their reflections of the lesson examined and must use the technology available in our classroom to help convey/organize ideas to be shared (be creative!). Groups must provide class members a copy of the lesson reviewed (including clear reference information for the lesson) along with highlights of their reflections/comments provided regarding items under #1 - #4 above.

Examining Student Thinking with Follow-up Student Interview (30%) – **Each student will complete 3 of these assignments (approximately 4-5 pages each in length).** Students will work in groups of 2 or 3 to complete two of these assignments. For the third of these tasks, students will work individually to examine a child’s thinking/responses resulting from the implementation of the *Mathematics Lesson Plan (& Reflection)* assignment. For all three of these assignments, access to an elementary-age child is required. Recent artifacts of an elementary child’s responses to a mathematics task or set of tasks must be obtained for group/student review and analysis. Possible artifacts include class work, homework, a test/quiz, or even a video recording of a student responding to a task or teacher questioning. Students will then examine children’s responses to a task or set of tasks and prepare follow-up questions to pose to the child in a subsequent interview. The follow-up interview must be audio/videotaped for later analysis and reporting purposes. The purpose of this activity is to engage students in: (1) identifying which standards (i.e., as stated in the National Council of Teachers of Mathematics & California Department of Education documents) are being addressed in a given mathematical task; (2) examining children’s mathematical thinking (as expressed in verbal, written, and/or kinesthetic responses) through a “Here’s what, So what, Now what?” framework; (3) drawing on appropriate chapter readings to inform this analytic process; (3) using information from an analysis of children’s thinking to formulate subsequent questions to pose to children; (4) planning for future instruction based on an analysis of children’s thinking; and (5) interviewing elementary-aged children using appropriate strategies.

Mathematics Lesson Plan & Reflection (20% total) – Working in small groups, your team will design a lesson to be facilitated (and videotaped) by at least one of your group mates in an elementary classroom during the week of Session 12. The purpose of this activity is to engage students in designing effective problem-based mathematics instruction, teaching mathematics for understanding and equity in an authentic classroom setting, examining/assessing children’s mathematical thinking, and observing and critically reflecting constructively upon a shared mathematics classroom teaching/learning experience.

Teacher Performance Expectation (TPE) Competencies (5%) – Students will demonstrate evidence of their development of competencies expressed in TPE 1a and TPE 2 by submitting reflection statements and appropriate artifacts on Taskstream.

Detailed information about the assignments will be given in class. You are responsible for ensuring that assignments are typed, submitted correctly, and on time. Late assignments will receive a reduction in points unless *prior arrangements* have been made with the instructor.

Summary of Assignments with Grade Weights

Responsibility/Assignment	Points	%
<i>Participation & Disposition (See also Attendance Policy)</i>	32	8
<i>Self-Reflection Essay #1</i>	16	4
<i>Self-Reflection Essay #2</i>	16	4
<i>Self-Reflection Essay #3</i>	16	4
<i>Chapter Reflections & Presentations:</i>		
<i>i. Activity for Classroom Practice w/ Connections to Standards</i>	30	7.5
<i>ii. Activity for Classroom Practice w/ Connections to Standards</i>	30	7.5
<i>iii. Examining a Lesson for Classroom Practice w/ Connections to Standards</i>	40	10
<i>Examining Student Thinking with Follow-up Student Interview #1</i>	40	10
<i>Examining Student Thinking with Follow-up Student Interview #2</i>	40	10
<i>Examining Student Thinking with Follow-up Student Interview #3</i>	40	10
<i>Mathematics Lesson Plan & Reflection</i>	80	20
<i>Teacher Performance Expectation (TPE) Submissions</i>	15	5
Total	400	100

Grading Scale:

Grades will be based on the following grading scale:

A 93 - 100%	A- 90 - 92%
B+ 88 - 89%	B 83 - 87%
B- 80 - 82%	C+ 78 - 79%
C 73 - 77%	C- 70 - 72%
D 60 - 69%	F Below 60%

All University Writing Requirement:

The writing requirement will be met through the following course assignments: reading reflections, student interviews, and lesson plan with reflection.

CSUSM Academic Honesty Policy:

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

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

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

Plagiarism:

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

Electronic Communication Protocol:

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

Things to consider:

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

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

Email Correspondence Guidelines:

Please use the following template in the subject box of your email message, EDMS543(09)_YourName_Question/ConcernMiscellaneous:

Other:

Please keep cellular phones on quiet mode and be mindful of food/drink consumption and disposal.

Tentative Course Outline

Date	Topic	Readings/Assignments Due
Session 1 August 28	<ul style="list-style-type: none"> • Welcome/Introductions • Problem-based learning 	
Session 2 September 4	<ul style="list-style-type: none"> • Critically reflecting on our school mathematics experiences • Course Overview 	Self-Reflective Essay #1 Due
Session 3 September 11	<ul style="list-style-type: none"> • Developing understanding in Mathematics • Teaching Through Problem Solving 	Van de Walle, ch. 3 & 4
Session 4 September 18	<ul style="list-style-type: none"> • Planning in the Problem-Based Classroom • Building assessment into instruction • Introduce “Here’s What, So What, Now What” 	Van de Walle, ch. 5 & 6
Session 5 September 25	<ul style="list-style-type: none"> • Teaching Mathematics Equitably to All Children • Developing Early Number Concepts and Number Sense 	Van de Walle, ch. 7 & 9 Mathematics Lesson Plan Topic Proposals Due Bring to class a student artifact for Examining Student Thinking & Interview #1 with a preliminary analysis
Session 6 October 2	<ul style="list-style-type: none"> • Developing Meanings for the operations • Helping Children Master the Basic Facts 	Van de Walle, ch. 10 & 11 Examining Student Thinking & Interview #1 Due
Session 7 October 9	<ul style="list-style-type: none"> • Whole-Number Place Value Development • Strategies for Whole-Number Computation • Whole-Number Place Value Development & Strategies for Computation Presentations: <ol style="list-style-type: none"> 1) Activity (ch. 12, pp. 187-200) 2) Activity (ch. 12, pp. 200-214) 3) Lesson (ch. 13) 	Van de Walle, ch. 12 & 13
Session 8 October 16	<ul style="list-style-type: none"> • Computational Estimation with Whole Numbers • Estimation with Whole Numbers Presentation: <ol style="list-style-type: none"> 1) Activity (ch. 14) • Algebraic Thinking • Algebraic Thinking Presentations: <ol style="list-style-type: none"> 1) Activity (ch. 15, p. 259-275, primary grades) 2) Lesson (ch. 15, p. 259-281, upper grades) • Mid-Semester Evaluation 	Van de Walle, ch. 14 & 15 (pp. 259-281 only) Mathematics Lesson Plan Drafts Due
Session 9 October 23	<ul style="list-style-type: none"> • Developing Fraction Concepts • Computation with Fractions • Fraction Concepts & Computation Presentations: <ol style="list-style-type: none"> 1) Activity (ch. 16, pp. 293-303) 2) Activity (ch. 16, pp. 303-313) 3) Lesson (ch. 17) 	Van de Walle, ch. 16 & 17 Self-Reflective Essay #2

Session 10 October 30	<ul style="list-style-type: none"> • Decimal & Percent Concepts and Computation • Decimal Concepts & Computation Presentations: <ol style="list-style-type: none"> 1) Activity (pp. 333-343) 2) Activity (pp. 343-350) 3) Lesson (ch. 18) 	Van de Walle, ch. 18 Examining Student Thinking & Interview #2 Due
Session 11 November 6	<ul style="list-style-type: none"> • Proportional Reasoning • Proportional Reasoning Presentations: <ol style="list-style-type: none"> 1) Activity (pp. 353-366) 2) Activity (pp. 366-372) 3) Lesson (ch. 19) 	Van de Walle, ch. 19
Session 12 November 13	<ul style="list-style-type: none"> • Developing Measurement Concepts • Measurement Presentations: <ol style="list-style-type: none"> 1) Activity (pp. 374-394) 2) Activity (pp. 394-405) 3) Lesson (ch. 20) 	Van de Walle, ch. 20 Implement & Videotape Mathematics Lesson
Session 13 November 20	<ul style="list-style-type: none"> • Geometric Thinking and Concepts • Geometric Concepts Presentations: <ol style="list-style-type: none"> 1) Activity (pp. 407-414, 414-431 [focus on Level-0 & Level-1 thinkers], 449-450) 2) Activity (pp. 407-414, 431-449 [focus on Level-0 & Level-1 thinkers], 449-450) 3) Lesson (ch. 21, focus on Level-0 & Level-1 thinkers) 	Van de Walle, ch. 21 Mathematics Lesson Final Lesson Plan & Reflection Due
Session 14 November 27	<ul style="list-style-type: none"> • Concepts of Data Analysis • Data Analysis Concepts Presentations: <ol style="list-style-type: none"> 1) Activity (pp. 452-467) 2) Lesson (ch. 22) • Exploring Probability Concepts: • Probability Concepts Presentation: <ol style="list-style-type: none"> 1) Activity (ch. 23) 	Van de Walle, ch. 22 & 23 Examining Student Thinking & Interview #3 Due
Session 15 December 4	<ul style="list-style-type: none"> • Developing Concepts of Integers • Complete TPEs 	Van de Walle, ch. 24 Self-Reflective Essay #3 Due

SB 2042 - AUTHORIZATION TO TEACH ENGLISH LEARNERS COMPETENCIES

PART 1: LANGUAGE STRUCTURE AND FIRST- AND SECOND-LANGUAGE DEVELOPMENT	PART 2: METHODOLOGY OF BILINGUAL, ENGLISH LANGUAGE DEVELOPMENT, AND CONTENT INSTRUCTION	PART 3: CULTURE AND CULTURAL DIVERSITY
I. Language Structure and Use: Universals and Differences (including the structure of English)	I. Theories and Methods of Bilingual Education	I. The Nature of Culture
A. The sound systems of language (phonology)	A. Foundations	A. Definitions of culture
B. Word formation (morphology)	B. Organizational models: What works for whom?	B. Perceptions of culture
C. Syntax	C. Instructional strategies	C. Intra-group differences (e.g., ethnicity, race, generations, and micro-cultures)
D. Word meaning (semantics)	II. Theories and Methods for Instruction In and Through English	D. Physical geography and its effects on culture
E. Language in context	A. Teacher delivery for <u>both</u> English language development <u>and</u> content instruction	E. Cultural congruence
F. Written discourse	B. Approaches with a focus on English language development	II. Manifestations of Culture: Learning About Students
G. Oral discourse	C. Approaches with a focus on content area instruction (specially designed academic instruction delivered in English)	A. What teachers should learn about their students
H. Nonverbal communication	D. Working with paraprofessionals	B. How teachers can learn about their students
I. Language Change		C. How teachers can use what they learn about their students (culturally responsive pedagogy)
II. Theories and Factors in First- and Second-Language Development	III. Language and Content Area Assessment	III. Cultural Contact
A. Historical and current theories and models of language analysis that have implications for second-language development and pedagogy	A. Purpose	A. Concepts of cultural contact
B. Psychological factors affecting first- and second-language development	B. Methods	B. Stages of individual cultural contact
C. Socio-cultural factors affecting first- and second-language development	C. State mandates	C. The dynamics of prejudice
D. Pedagogical factors affecting first- and second-language development	D. Limitations of assessment	D. Strategies for conflict resolution
E. Political factors affecting first- and second-language development	E. Technical concepts	IV. Cultural Diversity in U.S. and CA
		A. Historical perspectives
		B. Demography
		C. Migration and immigration