Teaching Mathematics in the Elementary School
EDMS 543 (CRN: 41572) - Fall 2004
Tuesday 8:15-2:15 Valley School

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The mission of the College of Education 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.

Required Materials:

- Star Test Blueprints for Standards Items http://www.cde.ca.gov/statetest/star/resources/blueprints.html
- NCTM (2000) http://standards.nctm.org
- Van de Walle, John A. (2001).Elementary and Middle School Mathematics; Teaching Developmentally. (5th edition). New York: Addison Wesley Longman.

Course Description:

Learning to teach math well is often difficult and often overlooked therefore this class will only be the beginning to your education in how to teach mathematics. The focus of this course will be (1) developing an understanding of the current "best practices" in teaching mathematics, (2) learning to teach content specific concepts using effective and appropriate strategies, and (3) teaching for mathematical understanding. Enfolded into this course will be curriculum development, understanding children's content thinking, creating a classroom environment that promotes the investigation and growth of mathematical ideas, and developing strategies to ensure the success of all students in a variety of settings.

Teacher Performance Expectation (TPE) Competencies:

This course is designed to help teachers seeking the Multiple Subjects Credential to develop the skills, knowledge, and attitudes necessary to assist schools and district in implementing an effective program 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.
Primary Emphasis: TPE 1a: Subject Specific Pedagogical Skills for MS teaching (Mathematics).

Key Assignments:

Reading Reflections: (20%) Students will be given 4 articles to read and reflect on in a one page paper.
Student Interviews (30%) You will conduct a series of three different student interviews

based on questions provided in class. For each interview you will pose mathematical problems to a student and observe as they work through the problem. After the interview you will write a one to two paper on what you have observed.

Mathematical Research: (10%) You will research one article to share in class. You need to provide a copy for each class member and lead a discussion in a small group. Sign-ups will be in class.

Mathematical Resources and Lessons: (30%) In small groups, your team will design a lesson that you will present to a class or our class on a predetermined topic. You will compile a set of resources on your topic and then design a lesson that you will present to a class. The purpose of this activity is to prepare you for the classroom.

Mathematics Web Sites: (10%) This assignment will give you the opportunity to explore web sites in the area of elementary mathematics education. You will describe three different sites, give your opinion in connection to what you have learned through class readings and discussions. You should write a one page paper on each site.

Class participation and attendance is also very important and you will lose points for being late, missing class, or turning in assignments late. This is the beginning of being "professional".

Focus Questions:

These focus questions will serve as a guide throughout this course. They will direct our thinking and study as we learn more about teaching children mathematics. When you complete this course, you should have knowledge, understanding, and experiences that will help you answer these questions.

1. How do children develop mathematical understanding, competence, and confidence?

2. How does the culture of the classroom affect mathematical communication and learning?

3. How does the teacher help all children become successful in learning mathematics?

4. How will you continue to develop your mathematical understanding, confidence, and competence?

5. How does the teacher analyze the curriculum in relation to State Mathematical Standards?

Course Requirements:

Attendance and Participation:
Punctual attendance and active participation are essential in this class, not only for you to learn, but so that others may benefit from your input. Late assignments will be penalized by a 10% reduction and after one week will be given a zero, no exceptions.

Assignments:
All written assignments must be typed and double-spaced. Assignments may be revised and resubmitted for re-grading up to a week after the assignment has been returned.

- **Reading Reflections:**

A 1-2 page reading reflection is required for 4 sets of articles and will be due at the beginning of the next class meeting. The purpose of this assignment is to introduce you to a variety of mathematic ideas. For each article respond to the main ideas of the literature by giving your ideas, opinions, and experiences as they relate to the topic. It is not necessary to write a summary.

- **Mathematic Web Sites: Due October 5th**

This assignment will give you the opportunity to explore web sites in the area of elementary mathematics education. You will describe three different sites, give your opinion in connection with our class readings and discuss the information on each site. You should also print an example of what you locate for each site. Your work will be evaluated on the completeness and thoughtfulness of your ideas. (1 page print-out and 1 page description for each site).

- **Student Interview Reflections Due September 14th, Sept.28th, and Oct. 12th.**

This assignment will provide you the opportunity to interview 3 different elementary students' thinking about mathematics. You will arrange to interview four students about their thinking in mathematics. After the interview, you will write a paper describing the child's ideas and strategies. You should also consider what you would do next in order to continue the child's learning experiences.
The interview questions will be presented and discussed in class.

- ✓ The best thing you can be in genuinely curious. *Remember* the point of the interview is to discover how the child thinks -not to guide the child to the correct answer.
- ✓ Your primary role is to listen. Make sure you allow enough "wait time".
- ✓ If you feel the child is really struggling and frustrated you may want to adjust the questions or if all else fails, end the interview early.

- **Planning and Teaching a Lesson/Reflection:**

For this assignment you will be divided into groups:
Group A: September 28th

Group B: September 28th
Group C: October 5th
Group D: October 5th
Group E: October 12th
Group F: October 12th
Group G: October 19th
Group H: October 19th

Working in small groups, your team will first compile resources on a predetermined mathematical topic and then design a lesson that you will present to a class. The purpose of this lesson is to explore a variety of resources on a specific topic and to provide an opportunity to teach a mathematical lesson. After you complete this assignment you will reflect and write about your lesson. Ask yourself what did the students learn. How do you know?, Did you need to make adjustments or changes during the lesson? What did you learn from teaching this lesson? Write a 1-2 page paper that analyzes your lesson.

Good planning and teaching provide for effective learning.

Weekly Readings and Lessons

August 31st	Read chapters 1-3 Van de Walle
September 7th	Read chapters 4-6 Van de Walle Looking at the Standards Assignment Student Interviews
September 14th	Read chapters 9 & 10 Van de Walle Developing Early Number Concepts
September 21st	Read chapters 11 & 12 Van de Walle Addition and Subtraction
September 28th	Read chapters 13 & 14 Van de Walle Multiplication and Division
October 5th	Read chapters 15-18 Van de Walle Fractions/Decimals Ratios/Proportions
October 12th	Read chapters 19-20 Measurements and Geometry

October 19th	Read Chapters 23 and 24 Exploring Functions Exponents, Integers, and Real Numbers

Algebraic Thinking and Problem Solving with be integrated throughout our meetings.