California State University San Marcos
College of Education
Summer 2003

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

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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 ongoing service. Our practices demonstrate a commitment to student-centered education, diversity, collaboration, professionalism, and shared governance.

REQUIRED MATERIALS

- California Department of Education (2000). Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve. Sacramento, CA: author. This document can be found on the WWW at: http://www.cde.ca.gov/standards/ The Web site contains both HTML versions and a downloadable PDF file. (I highly encourage students to purchase this publication). There are copies in the library for check out.
- National Council of Teachers of Mathematics (2000). Principles and standards for school mathematics. Reston, VA: author. Can be found on the WWW at: http://standards.nctm.org/
- Star Test Blueprints for Standards Items - http://www.cde.ca.gov/statetests/star/resources/blueprints.html
- Van de Walle, John A. (2001). Elementary and middle school mathematics: Teaching developmentally (4th ed.). New York: Addison Wesley Longman – The book also has a companion Web site - http://occawlonline.pearsoned.com/bookbind/pubbooks/vandewalle_awl/

COURSE DESCRIPTION

Learning to teach mathematics well is difficult and, therefore, you must expect that this course will only begin your education in learning how to teach mathematics. This course is but one stage in what I hope will be a continuing evolution of you as a mathematics teacher. The focus of this course will be on (1) developing an understanding of the current practices in mathematics, (2) learning to teach content specific concepts using effective and appropriate strategies, and (3) practicing how to teach for mathematical understanding. Enfolded into this course will be curriculum development, developing an understanding of children's content specific 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 multi-cultural settings. A significant portion of this class will occur in actual classrooms K-8.

Standards Alignment:

The course objectives, assignments, and assessments have been aligned with the CTC standards for Multiple Subjects Credential. The following standards are a primary emphasis in this course:

- Standard 3: Relationship between Theory and Practice
- Standard 4: Pedagogical Thought and Reflective Practice
- Standard 5: Equity, Diversity and Access to the Core Curriculum for All Children
- Standard 8A(a): Pedagogical Preparation for Subject-Specific Content Instruction by MS Candidates (Mathematics)

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. The following TPE's are addressed in this course:

Primary Emphasis:

- TPE 1a-Subject Specific Pedagogical Skills for MS Teaching (Mathematics)
- TPE 2-Monitoring Student Learning During Instruction
- TPE 3-Interpretation and Use of Assessments
- TPE 4-Making Content Accessible
- TPE 6a-Developmentally Appropriate Practices in Grades K-3
- TPE 6b-Developmentally Appropriate Practices in Grades 4-8
- TPE 6d-Teaching Special Education Populations in General Education Environments
- TPE 8-Learning About Students

Secondary Emphasis:

- TPE 5-Student Engagement
- TPE 6d-Developmentally Appropriate Practices for Special Education
- TPE 7-Teaching English Learners
- TPE 9-Instructional Planning
- TPE 10-Instructional Time
- TPE 11-Social Environment
- TPE 13-Professional Growth
- TPE 14-Educational Technology

ASSIGNMENTS

Detailed assignment sheets (course packet) will be provided for every assignment below. The assignment sheets and the course calendar are attached to this syllabus.

Reading Reflections

(30%) – Every two weeks students will turn in a "meaningful" reflection based on a) reading assignments from the course text and b) class discussions and activities. These reflections should be no more than 4 pages in length (use an "12" font, double-spaced, with **only** your name and class session number as a heading). You should a) clearly articulate your thoughts **on the assigned readings and class discussions and activities** and b) indicate how you plan to apply what you learned from these resources in teaching elementary mathematics. Please do not plagiarize from the readings.

Student Interviews (Critical Assessment Task – CATs)

(20%) - You will conduct two different student interviews based on questions provided in class. For each interview, you will pose mathematical problems to any one student at a predetermined grade level. The purpose is to get you to begin thinking about students' mathematical understanding, to learn how to effectively pose questions and interpret the meaning of students' answers, and to provide you with an opportunity to interact with students. You may conduct the interviews with another classmate (this is desirable as will be discussed in class).

Mathematical Resources & Lesson (Critical Assessment Task – CATs)

(35%)– Working in small groups, your team will first compile resources on a predetermined mathematical topic (20%) and then design a lesson that you will present to our class as if we

were your students (15%). The purpose of this activity is to help you learn how to design effective mathematical activities, to provide you with an opportunity to begin compiling mathematical resources, and to provide an opportunity for you to practice teaching mathematics.

Standards Presentation

(10%) – You will orally present a group of CA Mathematics Content Standard in class to your cohorts. The standard will be assigned the first day of class.

Active Participation and Collaboration (5%) – **Defined as actively engaging in** all **class discussions and activities, students will be evaluated daily. A positive attitude is an important component for establishing the definition for active participation and collaboration. All 5 points or no points are earned in this category.**

Assignment details and scoring rubrics described above are attached to this syllabus.

INFUSED COMPETENCIES

CLAD

In 1992, the College of Education voted to infuse Cross-cultural, Language and Academic Development (CLAD) competencies across the curriculum. The CLAD competencies are attached to the syllabus and the competencies covered in this course are highlighted.

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

Special Education

Consistent with the intent to offer a seamless teaching credential in the College of Education, this course will demonstrate the collaborative infusion of special education competencies that reflect inclusive educational practices.

Technology

This course infuses technology competencies to prepare our candidates to use technologies, emphasizing their use in both teaching practice and student learning.

ATTENDANCE POLICY

The attendance policy of the College of Education: Due to the dynamic and interactive nature of courses in the COE, 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. If you miss two class sessions or are late (or leave early) more than three sessions, you cannot receive a grade of "A". If you miss three class sessions, your highest possible grade is a "C+". Should you have extenuating circumstances, contact the instructor as soon as possible. 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. Furthermore, grades on assignments turned in late will be lowered unless **prior arrangements** have been made with the instructor.

PLAGIARISM AND CHEATING

Please be sure to read and understand the university policy on plagiarism and cheating, as it will be strictly enforced. Academic dishonestly will not be tolerated and will result in a failing grade for this course and will be reported to the University.

Students with Disabilities Requiring Reasonable Accommodations

Students are approved for services through the Disabled Student Services Office (DSS). This office is located in Craven Hall 5205 and can be contacted by phone (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.

GRADING SCALE: Grades for this course 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%

Remember! You are required to maintain a B average (3.0 GPA) in your teacher education courses to receive a teaching credential in the State of California.

SB 2042 – Authorization to Teach English Learners Competencies

TEST 1: LANGUAGE STRUCTURE AND FIRST- AND SECOND-LANGUAGE DEVELOPMENT	TEST 2: METHODOLOGY OF BILINGUAL, ENGLISH LANGUAGE DEVELOPMENT, AND CONTENT INSTRUCTION	TEST 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.** Intragroup 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 both English language development and 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 ***
II. Theories and Factors in First- and Second-Language Development	**III. Language and Content Area Assessment**	**C. How teachers can use what they learn about their students (culturally responsive pedagogy)***
A. Historical and current theories and models of language analysis that have implications for second-language development and pedagogy	**A. Purpose**	**III. Cultural Contact**
B. Psychological factors affecting first- and second-language development	**B. Methods ***	**A.** Concepts of cultural contact
C. Socio-cultural factors affecting first- and second-language development	**C. State mandates**	**B.** Stages of individual cultural contact
D. Pedagogical factors affecting first- and second-language development *	**D. Limitations of assessment ***	**C.** The dynamics of prejudice
E. Political factors affecting first- and second-language development	**E. Technical concepts ***	**D.** Strategies for conflict resolution

STUDENT INTERVIEWS GRADING RUBRIC: EDMS 543

How are the interview reflections to be completed?

For each of two interviews, write a meaningful reflection (no more than 2 pages) on:

1) the interview process and the results of your interview, as well as
2) specific, prescriptive recommendations that you would give your interviewee in light of his/her current level of mathematical understanding. Develop the reflection with an eye to helping your interviewee in terms of making effective instructional decisions for him/her.

Although the reflection should not exceed two pages, it **mus**t answer the following two questions:

1. **What specifically did you learn about this child's mathematical understanding?** You should provide ample evidence of knowledge gained from this experience. Be very specific about what it is that your interviewee understands or does not understand and how he/she demonstrated this understanding/lack of understanding.

2. **What specifically would you do for this child if you were his/her teacher?** This part of the reflection is clearly related to what was learned about the child by way of the interview. Be very specific and clear about what you would recommend as a follow-up.

For specific details on both of these two discussion points, please refer to "Student Interviewing Guidelines" in your course packet.

- **As you format your reflection, please bullet the two questions above you are responding to very clearly.**

How are the assignments assessed?

Each interview will be assessed using a generic 5-point scoring rubric and should:

- reflect good depth of understanding of the child's current mathematical level based on the interview problems.
- give specific and clear instructional recommendations for the child.
- be free of grammatical or typographical errors.
- be word processed

5 – Reflection shows good depth of understanding as well as clear, specific recommendations. The reflection is free of grammatical or typographical errors. Both sections reflect the criteria stated above.

4 – Reflection shows general depth of understanding and clear, specific recommendations. There may be a very minor grammatical or typographical error. One of the sections is slightly weak on one of the criteria listed above.

3 - Reflection shows moderate depth of understanding and recommendations are adequate. There may be few grammatical or typographical errors. Both sections are slightly weak or one is very weak.

2 - Reflection shows little depth of understanding and recommendations are not specific and clear. There may be considerable grammatical or typographical errors. Both sections are substantially weak.

1 – An attempt at a reflection was submitted. Your name is on the paper.

0 - No assignment was turned in.

REFLECTIONS GRADING RUBRIC: EDMS 543

How are the reflections assignments to be completed?

Write a meaningful reflection (no more than 4 pages) based on assigned readings, class activities, and discussions. Develop that reflection with an eye to demonstrating that you both read and understood the readings, class discussions, and activities. Do not plagiarize or quote the readings. Paraphrase and critically analyze only. Since there is an assigned reading per class session, weave the ideas from all the readings contained in into your reflection. (Occasionally a reading may assigned from a source other than the course textbook).

Although the reflection should not exceed 4 pages, it **mus**t answer the following two questions:

1. **What did I learn from the readings, classroom activities, and discussion?** This section is in your own words and is clearly written with a distinct description of what you learned. It provides ample evidence that you read and synthesized the reading material and understood class discussions and activities.

2. **How am I going to use what I learned in teaching children mathematics?** This section is clearly related to applying what was learned to classroom practice. The relationship of the readings, class discussion, and class activities to the classroom should be evident in the description of teaching practice, curriculum, classroom management, and/or developing students' mathematical thinking.

How are the readings assignments assessed?

Your paper will be assessed using a generic 5-point scoring rubric and should:

- reflect good depth of understanding the MAIN ideas as well as application to the classroom.
- be free of grammatical or typographical errors.
- be word processed according to specific directions given in the course syllabus under "Weekly Assignments".

5 – Reflection shows good depth of understanding the MAIN ideas as well as application to the classroom. The reflection is free of grammatical or typographical errors. Both questions answered reflect the criteria stated above.

4 – Reflection shows general depth of understanding the MAIN ideas and application to the classroom. There may be a very minor grammatical or typographical error. One of the questions answered is slightly weak on one of the criteria listed above

3 – Reflection shows moderate depth of understanding the Main ideas and application to the classroom. There may be few grammatical or typographical errors. Both questions answered are slightly weak or one is very weak.

2 – Reflection shows little depth of understanding the Main ideas and application to the classroom. There may be considerable grammatical or typographical errors. Both questions answered are substantially weak.

1 – An attempt at a reflection was submitted. Your name is on the paper.

0 – No assignment was turned in.

STUDENT INTERVIEWING GUIDLINES
EDMS 543 – Summer 2003

These assignments are designed to give you an opportunity to focus on a single child's thinking about mathematics. It will also help you to improve your use of inquiry for assessment purposes and to better understand elementary level students with different understandings.

I recommend that you have a partner for interviewing, if possible. **One** partner would be especially helpful for note-taking and additional insights into the child's thinking. As a pair, you would interview one child. Each person would then be responsible for writing up his/her own follow-up reflection. Papers should be submitted together, **along with the student work** (no names on the work, please

Interviews will be directed toward primary (K-2) or upper elementary (3-5) students. Therefore, if possible, students who are observing/student teaching in a K-2 classroom might want to pair with a student observing/ student teaching in a 3-5 classroom in order to be able to access students in these grade bands.

Be aware that each interview option is grade band specific and your interviewee should be in that grade range. You will turn in a non-optional "Practice Interview" due as per the course schedule in the syllabus. The second interview is left to your choice from among other specified mathematical content areas. Interviews are due according to a predetermined schedule attached to the syllabus.

Prior to the interview

- You should arrange with a teacher (or parent of a child you know) to interview one child for 20-30 minutes in a quiet place outside of the classroom, if possible (or at his/her home).

- Ask the teacher (or parent) what manipulatives the child has experience using and see if it is possible to have these materials available during the interview. You will always want paper and pencil and the appropriate manipulatives for each interview. Be considerate of the type of manipulative you give the child for each interview. For example, you would not want to give the child marbles as the manipulative if the interview questions deal with "pizza". Or you would not want to give the child coins if the interview questions deal with sharing cookies. **Do not give food items such as gum, cookies or candy for manipulatives, as these may be distracting to the child as well as prohibited in his/her diet. You can, however, make construction paper cut-outs of these items if they are referred to in the interview questions. Be creative and discriminating about manipulatives for each interview!**

- Develop a list of questions you may want to use if the child is not forthcoming with a response. For example, if the child says, "I just knew it", you might respond with, "What did you think about first?" or, "If you were helping a friend, how would you explain what you did?"

During the interview

Work with the child individually. Begin the interview by informing the child that you will be giving him/her a series of math problems to solve and that you are interested in his/her thinking process and in the strategies s/he uses to solve these problems. Tell the child that s/he can solve the problems in any way s/he wants. Introduce the child to the manipulatives available and inform him/her that s/he may use them if s/he wishes.

You should provide the child with a written copy of each problem from the interviews you received in class--only give the child one written problem at a time (not the entire interview). Orally read each problem along with the child and provide him/her with sufficient time to complete each problem.

After the child answers each problem, you should ask a variety of probing questions that will help you to better understand the child's thinking and to assess his/her mathematical understanding. **You will want to note the questions you ask and the child's responses,** and it may be necessary to ask the child to wait while you are writing--it is OK to ask the child to wait. **You should not tape-record/video-tape the interview without parental permission.**

During the interview, be sure to consider the following:

- The best thing you can be is genuinely curious. Remember, the point of the interview is to discover how the child thinks--**NOT** to guide the child to the correct answer.

- Be careful to respond similarly to correct and incorrect answers. Be curious about all solution strategies-not just the ones leading to incorrect solutions.

- Your primary role is to listen. Make sure you allow enough "wait time"--children need time to think before answering.

- **THE FOLLOWING STRATEGIES ARE RECOMMENDED TO PRESERVE THE DIGNITY OF THE LEARNER:**

  1. Attempt to first find out if the child can solve a given problem on his/her own without support.
  2. If the child is having difficulty with a given problem, provide support such as saying "how might drawing a picture of this problem help you?" or "how might these manipulatives help you think through this problem?"
  3. If after providing support the child is still unable to solve the problem, it is very important to provide the child with a follow-up question that still relates but that the child will be able to solve. This might entail making the numbers in the problem smaller or more manageable.

These strategies also provide you with determining if the child can solve the problem on his/her own, with support, or not at all, and the child still feels good about his/her ability.

If you end an interview early for any reason, be sure to discuss your reasoning in your write-up.

After the interview

You (and your partner) should each write a reflection (with line spacing of 1.5 and no more than two pages in length) that includes a clear discussion on **each** of the two bulleted points under the "Grading" section that follows.

NOTE: PLEASE ANSWER THESE QUESTIONS THOROUGHLY!! FULL CREDIT WILL NOT BE GIVEN UNLESS BOTH QUESTIONS ARE ADDRESSED!!

Grading:

Each interview will be graded according to a 5-point scoring rubric. **The grading rubric will detail and describe the grading criteria and levels 0 - 5**. Specifically, I will be looking for nicely written papers that clearly and specifically express what you learned about:

- What specifically did you learn about this child's mathematical understanding? Here you will want to make claims about the mathematics your student understands or doesn't understand. I am looking for more of an explanation than just your student could or couldn't solve a particular problem. You should briefly explain what the child said and did for each interview question.

- What specifically might you do for this child if you were his/her teacher? Here you might want to include discussions about such issues as curriculum, instructional strategies, etc. You **must** give at least 2 examples of word problems or clearly defined tasks you would give this child as a follow-up to your assessment of this child's current level of mathematical understanding in relation to the interview questions. For example, it is not enough to say that you would give your interviewee more fraction word problems, or would add manipulatives to this child's mathematical activities. Write out specific fraction word problems and the specific manipulative(s) you would use and in what context you would use them if these are your recommendations for your interviewee.

***NOTE:** When you turn in your write-up, you should also **include the child's written work** (if it exists) with the child's name removed. If it does not exist, please explain why. For all interviews, submit your reflection together with your partner's reflection and the child's work. Paper-clip (do not staple) this packet together.

****Interviews are due the class session that relates to the given content area in the interview (refer to syllabus).**

*****Please see me if you need clarification on any aspect of the interview assignments.**

CLASSROOM PRESENTATION GUIDELINES:
EDMS 543 (Summer 2003)

Purpose

The purpose of this activity is to assess your ability to create and teach a **reform-minded** mathematics lesson designed for a stated grade or grade-level span, e.g. K-2, 3-4, etc. (your choice). That is, students will participate in the design, construction, and presentation of a **reform-minded mathematical activity** which focuses on **children's mathematical thinking**. In class we will collectively determine some of the key elements to reform-minded teaching methods which enhance children's mathematical thinking. **For this assignment, your goal should be to merge theory and practice in order to enable students to understand a mathematical topic and make connections among ideas related to this topic. In addition, your activity should promote student engagement, curiosity, flexibility, and persistence in solving mathematical problems.**

Goals related to your participation in this activity include learning how to distinguish reform-minded lessons from traditional approaches, becoming acquainted with resources to support your teaching of mathematics and where to access those resources, and exploring the decision-making teachers experience when developing lessons for their students. You will be provided with an opportunity to practice teaching mathematics while you are learning about reform-minded mathematics in class. In addition, you will receive copies of your peers' lessons in an effort to begin a mathematics resource file.

Who?
Students will work in small groups of approximately two individuals on a particular mathematical topic (options for topics and group member decisions will be determined in class).

Select a group you can easily meet with after/before class. It is often desirable to select people who bring different talents to a group. Sometimes it is necessary to determine who lives close to you, as you may decide that on occasion it is best to get together other than at the CSUSM campus. These suggestions may help your group in dividing the work equitably as well as take advantage of group members' expertise.

Plan of Action:
When planning your activity, you should try to be **CREATIVE** while effectively incorporating the key components of the reform ideas into the activity. Your group should consider creating an integrated lesson that incorporates another content area such as language arts, social studies, science, etc. This integrated approach to teaching is very effective both in terms of student learning and classroom time considerations. **Warning:** Be careful not to lose sight of the mathematical issues in your fun activity!

Your group should:

- Decide on a specific mathematical objective you want your students to learn. You must create a **unique activity** on which to base your lesson plan. It should not be taken directly from a textbook or any other elementary mathematics resource. **It should be the group's original creation and design.**

- Find an equitable way to divide up the work load so that everyone participates fully in the design and implementation of your activity. At the conclusion of your activity, you will each be asked to evaluate each group member's participation and contribution. In addition, your peers may assess your activity and make recommendations and comments on a scoring template.

- Be certain that your activity does not lose sight of your mathematical objective. Continually ask, "What will all students be able to learn from this activity?" The answer to this question should be in alignment with your objective.

- Make certain that your lesson is in concert with *The California Mathematics Content Standards* document. (You certainly need to make good use of this document when you design you lessons. As future educators, all your mathematics lessons **must** always align with these standards.)

- Meet with me prior to the date of your presentation
  Your group must decide on and set a date to meet with me for this purpose. This meeting can be either after class or during my office hours.
  One of the primary purposes of this meeting is to provide me with an opportunity to work with each of you on a more individual basis so that I can help you learn to design effective mathematical activities. Consulting with me in advance gives your group an advantage in knowing you are on the right path. Please feel free to discuss ideas with me at any time (I will be happy to provide you with ideas/suggestions after your have thought about the ideas on your own). I will expect you to have prepared ideas for your presentation and to show me some of the resources you have identified for your lesson plan packet during this meeting.

- Prepare and rehearse to feel comfortable teaching your lesson in advance so that you might modify your presentation based on what you learn from rehearsal. You should always keep in mind that your **lesson should be grade appropriate**. Furthermore, you will want to practice your activity with others so that you know how long the lesson will take. Since your audience (your peers) are often pre-occupied, stressed out and tired, you should make sure that your anticipatory set or introductory motivator is very good.

ABOUT INSTRUCTIONAL RESOURCES FOR YOUR LESSON TOPIC… (worth 20%)

- **Investigate what information is available that relates to your topic. You are required to compile a thorough, effective list of such resources to demonstrate evidence that you are able to provide students with access to a balanced and comprehensive mathematics curriculum**. **A balanced program of mathematics instruction consists of interrelated components that promote and enhance student learning and understanding: conceptual understanding of the logic and structure of mathematics, problem-solving skills in mathematics, and computational and procedural mathematical skills. A balanced mathematics curriculum also purports to interrelate ideas and information within and across mathematics and other subject area.**

- For example, you might begin by investigating what the National Council of Teachers of Mathematics (NCTM) *Teaching Children Mathematics* or *Arithmetic Teacher* journals can offer in the way of providing you with suggestions. The CSUSM library carries *Teaching Children Mathematics* (look under the "mathematics" section of the journals rather than education). The NCTM also has numerous publications and resources that would be helpful to you as you design your activity. **Be certain to seek out other mathematics journals that would be relevant to your assignment.** You are also **required** do a thorough search on the **Internet** to locate other resources, including but not limited to, elementary mathematics journal articles related to your topic.

- **Technology resources that may facilitate the teaching and learning process are also to be researched and analyzed.** These include but are not limited to relevant software, multimedia, computer-assisted instruction, and productivity and presentation tools. You may want to consult with your master teacher for ideas regarding technologies that would add value to teaching your elementary mathematics lesson.

- It is hoped that you will learn about and begin to use appropriate computer-based technology to facilitate the teaching and learning process. Your goal as a professional educator is to consider the content you will teach and be able to select the appropriate technological resources to support and enhance learning for **all** students in relation to their prior experiences and level of academic accomplishment.

- **Children's literature** relating to mathematical ideas is very abundant and may be accessed in libraries, teacher supply store, bookstores, and on-line (Amazon.com, etacuisenaire.com, mathsolutions.com, e.g.). Don't forget your master teacher! Your resources page should list several examples of children's literature related to your topic.

- **Teacher reference books and support materials** include mathematics textbooks and other books relating to elementary mathematics content areas.
  An example is *Navigating Through Geometry in Grades 3-5* by M. K. Gavin et al (NCTM).

- Critically and carefully analyze **any and all resources** accessed, including those from the Internet. Keep in mind that you want to align your lesson with reform-minded mathematics methods and resources which reflect those attributes of effective teaching and learning as discussed in class.

- Other sources to gather ideas from: the San Diego County Office of Education, teacher supply stores, and of course, your master teacher.

ABOUT YOUR PRESENTATION DAY…(WORTH 15%)

- Each group will present their activity to the class which should last no more than 40 minutes including
  closure. Each group member should have some role in the presentation.

- On the day of your presentation , your group will need to turn in one nicely prepared document which will include the lesson plan for your activity. Your lesson plan packet must include a separate **"RESOURCES" page(s)** consisting of all teacher support materials, children's literature, journal articles, software, multimedia, etc., that relate to your topic. **These must be in bibliographic citation format**: author, date, title, city, and publisher. If citing journal articles, also include journal title, volume, journal article title, author, and page numbers.

  1. Teacher support materials/reference books
  2. Children's literature
  3. Relevant journal or research-related articles
  4. Annotated WWW sites which you used or which would be of interest to your peers
  5. Children's mathematical software and/or support technologies
  6. Manipulatives or learning tools (if possible) that you could identify and recommend to your peers as useful in enhancing the content area and concepts presented in your lesson.

- Include any useful information that you found when researching your topic so that your colleagues can learn from your work (Do not include duplicated pages from teacher workbooks; rather, provide citations). If each group prepares a packet of materials that is filled with important information, and we share that information in class, then you will each have a wealth of information on some of the important mathematical topics for use when you teach! Your support materials must be complete enough to support replication of the lesson you present.

Grades:

In this assignment, which will be worth 35% of the total grade for the course, I am as interested in the process your group goes through as much as the final product. I really want this to be an opportunity for you to learn and grapple with such things as where to go for mathematics resources, how to prepare lesson plans and what to consider when writing a lesson plan, the challenges of teaching your mathematics lesson, etc**. The 5-point grading rubric for this assignment will be based on the degree that the following criteria are met:**

1. Your lesson plan and activity should reflect reform-minded teaching and learning methods whereby **all** children learn mathematical concepts and procedures with understanding, and reflect and communicate their knowledge as they engage in interesting and problematic tasks. In addition, your lesson must adhere to The California Mathematics Content Standards. The California standards addressed by your lesson plan and activity should be listed by number and annotation in your lesson plan.
2. A complete, detailed, informative lesson plan packet which should specify grade level, content area, state specific goals, learning objectives, time frame, materials used, activity procedures, provide for closure or debriefing, and assessment methods. In addition, all resource components must be included as discussed above.
3. **The lesson plan should follow SDAIE methods of instruction, including accommodation for cultural and linguistic diversity (second language learners) as well as special needs learners (learning and physically challenged students as well as GATE students). You lesson plan should provide for differentiated teaching strategies to meet the mathematical needs of special populations.**
4. A clear presentation of the lesson plan which **focuses on children's mathematical thinking wherein** they can build new mathematical knowledge through problem solving, provide rationales for their solutions, make connections among and between mathematical ideas, and eventually are able to apply and generalize what they have learned to new situations.
5. A plan for student assessment/evaluation must be included in your activity and lesson plan. Be specific as to how you will determine that each student has "arrived" to his/her intended destination--your goals and objectives for them in the lesson. You should also include formative (ongoing) assessment during your activity/lesson. Therefore, both formative and summative assessment methods must be included in your activity and lesson plan.

Your lesson should be creative and unique, should make good use of what we know about how students think (within the context of your chosen topic), is grade appropriate, is well thought out and prepared, is sensitive to the needs of all students, and reflects reform-minded teaching methods. This is a time for you to try things out and to make mistakes in the execution of your lesson plan activity. Your classmates may provide you with feedback for your information only.

** YOUR PRESENTATION IS DUE ACCORDING TO THE COURSE SCHEDULE IN THE SYLLABUS.

Lesson Presentation Scoring Template
EDMS 543
NOTE: See assignment sheet for details

Presenters:

Date:
Grade:

Start Time:
End Time:

General Comments

Scoring Rubric

Score		Scoring Element
	A.	Mathematics Reform in Alignment with CA Mathematics Content Standards -
	B.	Support Materials and Lesson Plan -
	C.	Diversity -
	D.	Student Thinking -
	E.	Assessment -

Document Check

1. Lesson Plan

2. Resources
   a. Children's Literature
   b. Teacher References/Support Materials
   c. Journal Articles
   d. Annotated Web Sites/Internet Resources
   e. Use of Technology

Commendations/Recommendations

Lesson Presentation Assignment

EDMS 543

	Developing	Nearly Meets	Meets	Exceeds
TPE 1, 1a Subject Specific Pedagogical skills for MS Teaching Assignment (Teaching Mathematics in a Multiple Subject Assignment)	Candidates' lesson plan and presentation demonstrates little to no understanding of how to teach the state adopted academic content standard in mathematics	Candidates' lesson plan and presentation demonstrates some understanding of how to teach the state adopted academic content standard in mathematics	Candidates' lesson plan and presentation demonstrates considerable understanding of how to teach the state adopted academic content standard in mathematics	Candidates' lesson plan and presentation demonstrates exceptional understanding of how to teach the state adopted academic content standard in mathematics
TPE 4 Making Content Accessible	Candidates' lesson plan and presentation will demonstrate little to no understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidates' lesson plan and presentation will demonstrate some understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidates' lesson plan and presentation will demonstrate considerable understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidates' lesson plan and presentation will demonstrate exceptional understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum
TPE 6, 6a, 6b Developmentally Appropriate Teaching Practices – Grades K-3 & 4-8	Candidates' lesson plan and presentation will demonstrate little to no understanding in the use of developmentally appropriate teaching practices.	Candidates' lesson plan and presentation will demonstrate some understanding in the use of developmentally appropriate teaching practices.	Candidates' lesson plan and presentation will demonstrate considerable understanding in the use of developmentally appropriate teaching practices.	Candidates' lesson plan and presentation will demonstrate exceptional understanding in the use of developmentally appropriate teaching practices.

Secondary TPE's for this Assignment

- TPE 2 – Monitoring Student Learning During Instruction
- TPE 5 – Student Engagement
- TPE 9 – Instructional Planning
- TPE 10 – Instructional Time
- TPE 11 – Social Environment

Lesson Resources Assignment

EDMS 543

	Developing	Nearly Meets	Meets	Exceeds
TPE 4 Making Content Accessible	Candidates' resources and descriptions will demonstrate little to no understanding of how instructional resources can help provide all students with access to a balanced and comprehensive curriculum.	Candidates' resources and descriptions will demonstrate some understanding of how instructional resources can help provide all students with access to a balanced and comprehensive curriculum.	Candidates' resources and descriptions will demonstrate considerable understanding of how instructional resources can help provide all students with access to a balanced and comprehensive curriculum.	Candidates' resources and descriptions will demonstrate exceptional understanding of how instructional resources can help provide all students with access to a balanced and comprehensive curriculum.

Secondary TPE's for this Assignment

- TPE 1a – Subject-Specific Pedagogical Skills for MS Teaching Assignments (Teaching Mathematics in a MS Assignment)
- TPE 5 – Student Engagement

Student Interview Assignment

EDMS 543

	Developing	Nearly Meets	Meets	Exceeds
TPE 1, 1a Subject Specific Pedagogical skills for MS Teaching Assignment (Teaching Mathematics in a Multiple Subject Assignment)	Candidate's assessment and recommendations from the student interview demonstrates little to no understanding of how to teach the state adopted academic content standard in mathematics	Candidate's assessment and recommendations from the student interview demonstrates some understanding of how to teach the state adopted academic content standard in mathematics	Candidate's assessment and recommendations from the student interview demonstrates considerable understanding of how to teach the state adopted academic content standard in mathematics	Candidate's assessment and recommendations from the student interview demonstrates exceptional understanding of how to teach the state adopted academic content standard in mathematics
TPE 2 Monitoring Student Learning During Instruction	Candidate's assessment and recommendations from the student interview demonstrates little to no understanding of how to monitor student learning and how to effectively make use of this information when teaching.	Candidate's assessment and recommendations from the student interview demonstrates some understanding of how to monitor student learning and how to effectively make use of this information when teaching.	Candidate's assessment and recommendations from the student interview demonstrates considerable understanding of how to monitor student learning and how to effectively make use of this information when teaching.	Candidate's assessment and recommendations from the student interview demonstrates exceptional understanding of how to monitor student learning and how to effectively make use of this information when teaching.
TPE 3 Interpretation and Use of Assessments	Candidate demonstrates little to no understanding of how to effectively assess students' content knowledge through the use of student interviews.	Candidate demonstrates some understanding of how to effectively assess students' content knowledge through the use of student interviews.	Candidate demonstrates considerable understanding of how to effectively assess students' content knowledge through the use of student interviews.	Candidate demonstrates exceptional understanding of how to effectively assess students' content knowledge through the use of student interviews.
TPE 4 Making Content Accessible	Candidate's recommendations from the student interview demonstrates little to no understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidate's recommendations from the student interview demonstrates some understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidate's recommendations from the student interview demonstrates considerable understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidate's recommendations from the student interview demonstrates exceptional understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum

Secondary TPE's for this Assignment

- TPE 5 – Student Engagement
- TPE 6, 6a, 6b – Developmentally Appropriate Practices in Grades K-3 & Grades 4-8.
- TPE 8 – Learning about Students
- TPE 9 – Instructional Planning

DATE	EDMS 543 COURSE TOPIC(S): Tuesday/Thursday	Van De Walle text chapters
05/27/03	Course Introduction Why do we do mathematics? (Big picture) Conceptual vs. procedural knowledge Characteristics of Effective Classrooms: Overview of Instructional Practices	 2 - Exploring What It Means to do Mathematics 22 -Planning for Effective Instruction
05/29/03	Developing understanding—How do kids learn? Teaching through problem solving Discussion of Cognitively Guided Instruction Interviews Assessment – Discussion in terms of how kids learn through problem solving development	3 -Developing Understanding in Mathematics 4 -Teaching Through Problem Solving 5 -Building Assessment into Instruction
06/03/03	Mathematics Content Standards for California Public Schools **Group presentations of assigned standards** CA Mathematics Standards Star Test Blueprint Special Populations: Creating Inclusive Classrooms Multiple representations: Meeting the needs of all children	This document is available on: http://www.cde.ca.gov/standards/ 23 – Teaching All Children Mathematics
06/05/03	Number Sense I: **PRACTICE INTERVIEW DUE** What it means and how we can help children develop it.	6 - Developing Early Number **Concepts and Number Sense**
06/10/03	Number Sense II: Classification of word problems for addition, subtraction, multiplication, and division. How all children can construct efficient mental tools for fact mastery. **Reflection 1 due**	7 -Developing Meanings for the Operations 8 – Helping Children Master the Basic Facts
06/12/03	TECHNOLGY OR LIBRARY SESSION	PLACE TBA
06/17/03	Number Sense III: Developing understanding of place value **Place Value Interview due** Developing flexible methods of computation, mental strategies, and estimation. **Addition/Subtraction OR Multiplication/Division Interviews due (turn in only one interview)**	9 - Whole-Number Place-Value Development 10 - Strategies for Whole Number Computation
06/19/03	Fractions I: Constructing understanding of fractions Extending whole number computation methods to fraction computation **Fraction classroom presentation** **Fraction interview due**	12 -Developing Fraction Concepts 13 - Computation with Fractions
06/24/03	Measurement - Customary and metric system **Measurement classroom presentation** **Measurement interview due** **Reflection 2 due**	16 -Developing Measurement Concepts
06/26/03	Geometry – Developing geometric reasoning and spatial sense **Geometry classroom presentation** **Geometry interview due**	17 - Geometric Thinking and Geometric Concepts
07/01/03	Probability & Data Analysis – Developing meaningful experiences in gathering and displaying statistical data. Exploring concepts of chance, simple and independent events. **Probability & Data Analysis classroom presentation** **Probability & Data Analysis interview due**	18 - Exploring Concepts of Probability and Data Analysis
07/03/03	Algebraic Reasoning and Function – Exploring patterns, variables, and equations. Developing function concepts. **Algebra classroom presentation** **Reflection 3 due**	19- Algebraic Reasoning 20 – Exploring Functions