

CURRENT ISSUES AND RESEARCH IN MATHEMATICS EDUCATION

EDST 620 - Fall 2003

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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:

- Lampert, M. (2001). *Teaching problems and the problems with teaching*. New Haven, CT: Yale University Press.
- Additional articles will be assigned in class

COURSE DESCRIPTION:

In this course, we will identify and investigate a few of the most current issues and problems in mathematics education as well as become familiar with the major areas of research in the field. A significant focus of this course will be on research that can help to inform practitioners in the teaching and learning of mathematics, especially research that will help us to better understand teaching practice as it is enacted in the complexity of the classroom.

WRITTEN ASSIGNMENTS:

Assignment	Points	Due Date
1. Reading Reflections	25	Due each class session we have assigned reading
2. Important Issues in Mathematics Education	15	October 8: paper due
3. Review of Research – General Topic	30	September 24: group identified topic December 10: paper due
4. Specific Issue of Personal Interest	30	October 8: issue for investigation due November 11: paper due

PROFESSIONALISM:

As a professional in the field of education, you need to take seriously your responsibility for learning and helping others learn in this class. As a professional, you should:

- attend all classes
- arrive on time and remain for the entire period
- be prepared for each class by having thoughtfully completed all readings and assignments
- keep me informed of any extenuating circumstances in your life that may hinder your ability to succeed in this course
- remain on task during class sessions
- respect others' opinions in the class
- be curious about ideas different than your own

Since it is expected that everyone will act professionally in all class sessions, final grades will be lowered for an unprofessional attitude or behavior (including lack of or inappropriate participation). Arriving late, leaving early, or skipping classes will be interpreted as lack of participation (please also see COE Attendance Policy below)

I take very seriously the idea that our class is a community of learners. It is important that everyone feels both encouraged to participate and a responsibility to participate. All ideas are welcome including those that are different than my ideas and those of the majority of the class. Only through explorations of multiple perspectives will we be able to really address the complex issues of teaching and learning mathematics.

COE ATTENDANCE POLICY:

Due to the dynamic and interactive nature of course 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.

ASSIGNMENTS:

All written assignments must be typed and double-spaced. Each assignment is due on the date indicated on the syllabus, and grades on late assignments will be lowered unless **prior arrangements** have been made with the instructor.

GRADING SCALE:

Grades will be based on the following grading scale:

A.....	90 -100%
B.....	80 - 89%
C.....	70 - 79%
D.....	60 - 69%
F.....	Below 60%

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.

DATE **TOPIC & ASSIGNMENT DUE *ON THAT DAY***

Session #1 (9/3)

COURSE INTRODUCTIONS AND OVERVIEW

Introduction to the course and general overview of the research issues in mathematics education.

Session #2 (9/10)

INTERNATIONAL ISSUES IN MATHEMATICS EDUCATION

Read and be prepared to discuss issues related to TIMSS. Conduct an internet search to find information about TIMSS and be prepared to discuss your findings in class.

Session #3 (9/17)

TEACHING PRACTICES & RESEARCH METHODS

Read and be prepared to discuss Chapters 1, 2, & 3

Session #4 (9/24)

CLASSROOM CULTURE & STUDENT THINKING

Read and be prepared to discuss Chapters 4 & 5

Session #5 (10/1)

MAKING TEACHING DECISIONS

Read and be prepared to discuss Chapters 6 & 7

Session #6 (10/8)

CHILDREN'S CONTENT SPECIFIC THINKING

***IMPORTANT ISSUES IN MATHEMATICS EDUCATION PAPER DUE**

***ISSUE OF PERSONAL INTEREST PROPOSAL DUE**

Session #7 (10/15)

MAKING CONNECTIONS & TEACHING FOR UNDERSTANDING

Read and be prepared to discuss Chapter 8

Session #8 (10/22)

MATHEMATICS CONTENT & CURRICULUM

Read and be prepared to discuss Chapter 9

Session #9 (10/29)

STUDENT MOTIVATION

Read and be prepared to discuss Chapter 10

Session #10 (11/5)

CLASSROOM INTERACTIONS & EQUITY

Read and be prepared to discuss Chapter 11 & 12

Session #11 (11/12)

PERSONAL ISSUES OF INTEREST

PRESENTATIONS AND PAPER DUE TODAY

Session #12 (11/19)

ASSESSMENT

Read and be prepared to discuss Chapter 13

Session #13 (11/26)

TEACHER BELIEFS, KNOWLEDGE & PROFESSIONAL DEVELOPMENT

Read and be prepared to discuss Chapter 14

Session #14 (12/3)

Group Review of Research #1

Session #15 (12/10)

Group Review of Research #2

*** GROUP RESEARCH PAPER DUE TODAY**

Session #16 (12/17)

Final Wrap-up and look back

Assignment #1 - Reading Reflections

Due Date:

Reading reflections will be due at the beginning of each class session that we have assigned reading. The reflection due should cover the reading(s) for that class session.

Assignment:

You are to write a "meaningful" 1-2 page reflection that identifies and considers a few of the important issues found in the chapters and/or assigned articles. Your reflections do not need to be formal or more than one page in length, rather the emphasis should be on the thought process that goes into the reflection.

More specifically, your 1-2 page reflection should:

1. identify a few of the important issues from your reading assignment
2. discuss how this information: a) relates to other issues or topics of interest, b) might influence your practice, c) might be extended and/or applied to other situations or problems, or d) is important in mathematics education
3. remain on topic as it relates to the reading assignment (reflections should focus on the article(s) and not on your own personal experiences – a little is OK if it is relevant)

Purpose:

One of the primary means of developing an understanding of content is through the act of reflection. It is through this act that we construct relationships, extend and apply our knowledge, clarify our own thinking, and make the knowledge our own. The act of writing out the reflection forces us to further clarify our thinking and put our thinking into words. It is my hope that you will spend quality time reflecting on the readings and that you consider these papers more than just another "assignment" to be completed. The purpose is to give you a chance to really think about what you read, what you found to be important, and to consider how you might make use of this new information.

Assignment #2 - Important Issues in Mathematics Education

Due Date:

This assignment will due at the beginning of class on **October 8, 2003**. Your group needs only to submit one nicely prepared paper for the entire group. In addition to the paper, each member of the team is to attach a short description of the work that he/she completed for the group project and a statement as to whether the group fairly shared the workload. Grades will be lowered for members of the group that do not fairly contribute to the assignment.

Assignment:

Working in small groups of approximately three, you are to identify and briefly describe what you believe are a few of the most important issues in the field of mathematics education. This is not to suggest that I am interested in your group outlining “all” of the important issues, rather I would prefer that you identify and describe what you believe are 3-4 of the most important issues in the field.

Your paper should be 6-9 pages in length, identify the major factors of the issue, and discuss why you believe the issue is such an important issue right now. More specifically, for each issue that you identify you should:

1. describe the problem as clearly and in as much detail as possible (be sure to include as much pertinent information as possible)
2. discuss why you believe this is one of the most important issues in the field (what makes it so important?)
3. identify the sources that you used and that might help us to further investigate this topic

Where to Search for Information:

1. The internet
2. ERIC & ERIC Document Reproduction Service (EDRS) – As a CSUSM student you can gain access to many of these research articles on-line (e.g, PDF files) and/or on microfiche in our library.
3. CSUSM Library and interlibrary loan
4. SDSU and UCSD library (unfortunately, more resources in mathematics education)
5. My personal collection of research (I will be bringing some of my resources to class)
6. Your own experiences and the experiences of your colleagues (consider CA documents)

Purpose:

The purpose of this assignment is to help you to become familiar with some of the most important issues in mathematics education and with the research in the field.

Assignment #3 - Review of Research

Due Dates:

1. Each group will submit a brief proposal that clearly identifies the topic the group would like to investigate by **Wednesday, September 24, 2003**. Please include an alternative topic in case your first topic is unavailable or it overlaps with another group's topic. I will make every effort to provide each group with their first choice and will discuss any conflicts and/or alterations necessary before an assignment is made.
2. The actual report will be due at the start of class on **Wednesday, December 10, 2003**. In addition to the paper, each member of the team is to attach a short description of the work that he/she completed for the group project and a statement as to whether the group fairly shared the workload. Grades will be lowered for members of the group that do not fairly contribute to the assignment. Each group should also be prepared to give a short 10-15 minute presentation on their topic in class.

Assignment:

Working in groups of approximately five, each group will write a 10-15 page paper that identifies and reviews some of the most important research on the identified topic. Groups must provide a general framework of research on the topic, a general description of the various issues, a brief discussion of each issue, and references to support your review and for further investigation. As an alternative, groups might decide to conduct a small scale study or project focused on an issue in mathematics education (plan must be approved first to make sure IRB approval is not necessary).

Where to Search for Information:

1. The internet
2. ERIC & ERIC Document Reproduction Service (EDRS) – As a CSUSM student you can gain access to many of these research articles on-line (e.g, PDF files) and/or on microfiche in our library.
3. CSUSM Library and interlibrary loan
4. SDSU and UCSD library (unfortunately, more resources in mathematics education)
5. My personal collection of research (I will be bringing some of my resources to class)

Purpose:

The purpose of this assignment is to learn how to review research on a given topic in the field of mathematics education, to determine the framework of the topic, and provide a review of that research.

Assignment #4 - Issue of Personal Interest

Due Date:

1. A brief proposal that identifies a specific problem that you would like to investigate will be due at the start of class on or before **October 8, 2003**. Please include an alternative problem for investigation in case your first is unavailable. I will make every effort to provide each student with his/her first choice and will discuss any conflicts and/or alterations necessary before an assignment is made.
2. The paper will be due at the beginning of class on **November 11, 2003**. Each person should also be prepared to give a short 3-5 minute presentation on their issue of interest in class.

Assignment:

For this assignment you are to investigate the research that can help to inform a given problem in the field of mathematics education. Furthermore, you are to provide a review of relevant research related to the problem you have identified, describe any conclusions you might be able to draw as a result of your research, and identify the sources that you used and that might help us to further investigate this topic. Your paper should be 4-6 pages in length.

Where to Search for Information:

1. The internet
2. ERIC & ERIC Document Reproduction Service (EDRS) – As a CSUSM student you can gain access to many of these research articles on-line (e.g, PDF files) and/or on microfiche in our library.
3. CSUSM Library and interlibrary loan
4. SDSU and UCSD library (unfortunately, more resources in mathematics education)
5. My personal collection of research (I will be bringing some of my resources to class)

Purpose:

The purpose of this assignment is to provide you an opportunity to investigate how research can provide support and guidance on a specific problem in the field of mathematics education.