

TED 380

Elementary Mathematics Education

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Office Hours: Before and after class, by appointment, or feel free to drop in if the door is open.

Throughout the semester, we will use **blackboard.uncg.edu** for course assignments, communications, and announcements. *Please check this and your e-mail on a regular basis.* I will e-mail you throughout the semester using Blackboard, which only stores your UNCG e-mail address.

GOALS:

This course aims to develop sensitivity to the needs of children as learners of Mathematics. Rather than attempting to “teach” every topic of the primary mathematics curriculum, this course is designed to develop the decision-making processes required for providing appropriate mathematical experiences for young children. By engaging in and analyzing activities that emphasize problem-centered learning as the basis for learning and teaching mathematics students will develop an understanding of the essential approaches vital to the establishment of mathematical thinking.

OBJECTIVES:

1. To develop an understanding of how research, theory and practice combine to facilitate young children’s learning of mathematical concepts.
2. To continue to develop a coherent philosophy of teaching and learning mathematics.
3. To gain insight into the relationship between teaching and learning as it applies to primary mathematics education.
4. To explore ways of planning, facilitating and evaluating mathematics lessons.
5. To develop a problem-centered approach to stimulate pupil inquiry for learning of mathematics.
6. To be able to describe and implement a variety of appropriate instructional strategies to assist primary children in constructing mathematical ideas.
7. To be able to use appropriate materials and technology which facilitate learning of mathematics in the primary grades.
8. To use a range of evaluation practices which result in valid measures of pupil achievement.

MAJOR THEMES:

- I. Mathematics as an activity of constructing patterns and relationships.
- II. Imagery as an underlying aspect of meaningful mathematics learning.
- III. Learning environments
 - A. Problem centered learning

- B. The rationale for collaborative learning
- C. Games
- D. Literature and writing in mathematics
- IV. Generating mathematics procedures in a meaningful setting
- V. The role of technology in mathematics learning
- VI. Assessment and alternative evaluation procedures.
- VII. NCTM's (and NCSCoS) mathematical content standards of *Algebra* and *Number & Operations* as related to the following process standards:
 - A. Problem Solving
 - B. Reasoning & Proof
 - C. Communication
 - D. Connections
 - E. Representation

REQUIRED MATERIALS:

Frykholm, J. (2008). *Learning to Think Mathematically with the Rekenrek: A Resource for Teachers, A Tool for Young Children*
 ISBN: 978-1-60702-483-5 (therekenrek.com)

Wheatley, G. H. & Reynolds, A. (1999). *Coming to Know Number: A Mathematics Activity Resource for Elementary School Teachers*
 ISBN: 1-893779-04-2 (www.mathematicslearning.org) Also available in the UNCG bookstore.

Wheatley, G.H. (2007). *Quick Draw: Developing Spatial Sense in Mathematics* (2nd ed)
 ISBN: 1-893799-20-4 (www.mathematicslearning.org) Also available in the UNCG bookstore.

Please Note: *Teaching Children Mathematics* will be a useful reference for this course. This journal series from NCTM is located in the library.

ASSESSMENT:

Grades will be determined in the following manner (details for each assignment are on Blackboard):

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| 1. | Weekly Reading Responses | 10% |
| 2. | Weekly Personal Responses | 5% |
| 3. | Attendance | 10% |
| 4. | Child Interactions | 25% |
| 5. | Mathematics Lesson (critical performance) | 25% |
| 6. | Website | 25% |

TED Departmental Grading Policy

The School of Education is a professional school, and the Department of Teacher Education & Higher Education is responsible for preparing professional teachers. The criterion for excellence is embedded in the word “professional” -- that is, an ability to use professional knowledge creatively and adaptively and to engage in appropriate dispositional characteristics. TED instructors are dedicated to two propositions: (1) providing students with adequate background and scaffolding for them to understand the content and pedagogy in question and (2) assigning grades that reflect each student’s potential to be a professional. Consequently, you are not entitled to a particular grade by virtue of your admission to the School of Education; rather, your instructor has the responsibility to make a professional judgment about both your performance and your disposition and to assign a grade accordingly. Specifically, TED instructors will use the following criteria when assigning grades to assignments:

A – Excellent work that demonstrates not only a clear understanding of the material but also a superior ability to utilize that material in the assignment submitted. All criteria are met. The student’s work goes beyond the task and contains additional, unexpected or outstanding features.

B – A solid piece of work that demonstrates a good understanding of the material under study and utilizes that material well in the assignment submitted. The student meets the assignment criteria, with few errors or omissions, but there are few additional, unexpected or outstanding features.

C – Work that demonstrates a technical, or basic, understanding of the material under study and which utilizes that material adequately in the assignment submitted. The work meets the assignment criteria.

D – Work that fails to demonstrate a basic, or technical, understanding of the material under study and fails to use relevant material in the assignment submitted. Work may not address one or more criteria or may not accomplish what was asked.

F – Work that is incomplete, inappropriate, and/or shows little or no comprehension of the class material in the assignment submitted.

Regarding the final course grade, the instructor will compute scores on the course assignments according to the criteria specified in this syllabus. The instructor then has the obligation and reserves the right to raise or lower the final grade based on evidence regarding performance and/or disposition if, in his or her judgment, the work and/or disposition of the student warrants it.

ASSIGNMENTS:

All written items should include a professional standard of spelling, grammar and punctuation. Cohesion of thought, clarity of expression, depth of reading, analysis of issues and relevance of discussion will need to be evident. Use of appropriate referencing style, use of headings and subtitles if necessary and reference list will be standard requirements for each assignment.

The details for all assignments in this course are outlined on Blackboard along with due dates.

ATTENDANCE:

In this course it is impossible to be engaged in quality learning without taking these components seriously. Poor or late attendance, or not attending for the full class time, may adversely affect your grade in the class. It is expected that students will refrain from scheduling any appointments during class time. Whether you have an excused or unexcused absence, you are still missing important components to the course:

2 absences = final grade in the course will be lowered by one full letter grade

3 absences = final grade in the course will be lowered by two full letter grades

4 absences = F in the course

3 tardies = 1 absence, this means arriving to class late *and/or* leaving class early

A NOTE ON READING RESPONSES:

Each week you are expected to type a one paragraph (single-spaced, size 12 font, times new roman) response about the reading I have assigned. Each response must include one quote from the article and is to be submitted electronically on Blackboard by midnight the night before class meets. These reading responses are graded on a 3-point rubric as follows:

3 – Response addresses the prompt with references to the readings for the week, and when appropriate, earlier readings. Opinions, observations, and/or past experiences are thoughtfully related to the readings throughout the response.

2 -- Response addresses the prompt with references to the readings for the week. Connections between the readings and opinions, observations, and/or past experiences are present.

1 – Response submitted either does not address the prompt or does not refer to the readings.

0 – No response is submitted.

PREPARATION, PARTICIPATION, AND ATTENDANCE FOR CLASS:

To be effectively engaged in this class you will need to:

- 1) Be prepared by reading and reflecting on assigned material each week.*
- 2) Show involvement in class through participation in class discussion.*
- 3) Demonstrate purposeful engagement with activities during class time.*

UNCG cares about your success as a student. We recognize students often balance many challenging personal issues and demands. Please take advantage of the University resources designed to help. For assistance accessing these resources contact the Dean of Students Office at 334-5514 or Student Academic Services at 334-5730. The Counseling and Testing Center is available for mental health assistance, 334-5874. You may also visit me during my office hours.

Inclement Weather:

If the university is closed, class will be cancelled. In case you are unsure, check your e-mail and Blackboard – I will e-mail everyone to confirm class cancellations.