

MORAVIAN COLLEGE
Bethlehem, Pennsylvania 18018

Education 325Z, *Mathematics in the Elementary School*
Lisa Onkotz • Spring 2006
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office hours: Tuesday 6:00 – 6:30 PM (prior to class)

<p><i>Education 325</i> is designed to help you help children learn important mathematical concepts, skills, and problem solving techniques. In the process it is hoped that your thinking will be challenged and your interest in mathematics stimulated.</p>	<p>Students in EDUC 325 must have:</p> <ol style="list-style-type: none">1. A minimum grade point average of 2.72. Completed EDUC 150 and 1553. Completed MATH 125 with a C or better4. Passed the PPST in mathematics
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COURSE OBJECTIVES:

- ⇒ You will review the content underlying and included in elementary school mathematics programs.
- ⇒ You will develop an understanding of the NCTM *Principles and Standards for School Mathematics*.
- ⇒ You will develop an understanding of the PA Mathematics Standards.
- ⇒ You will demonstrate competency of basic elementary mathematical operations and procedures.
- ⇒ You will acquire an understanding of basic elementary mathematical concepts.
- ⇒ You will develop a comprehensive view of an appropriate mathematics curriculum, goals of instruction, and types of mathematical learning.
- ⇒ You will learn specific strategies to teach selected content to specific children as well as general teaching strategies appropriate for differentiating instruction for all learners.
- ⇒ You will develop pedagogical skills: planning, selection of appropriate materials and lessons, managing a mathematics class, diagnosing, and evaluating.
- ⇒ You will become familiar with a variety of manipulatives.
- ⇒ You will develop an understanding of how to integrate the use of technology into the study of and the teaching of mathematics.
- ⇒ You will become conscience of equity issues in the study of mathematics.
- ⇒ You will develop a positive attitude toward teaching mathematics.

REQUIRED TEXT:

Reys, Robert E.; Lindquist, Mary M.; Lambdin, Diana V.; Smith, Nancy L.; Suydam, Marilyn N. *Helping Children Learn Mathematics*. New York, NY: John Wiley & Sons, Inc., 2004.

SUPPLEMENTAL:



PA Mathematics Standards



COURSE SCHEDULE:

Jan 17	Course Introduction Teaching Mathematics in a Changing World PA Mathematics Standards	Chp 1
Jan 24	Learning Theory and a Teacher's Role Textbook Explorations	Chp 2 & 3
Jan 31	Assessment and Process Standards	Chp 4 & 5
Feb 7	Helping Children with Problem Solving Article Discussion	Chp 6
Feb 14	Quiz on chapters 1-6 Article Discussion	
Feb 21	Number Sense / Place Value	Chp 7 & 8
Feb 28	Whole Number Operations	Chp 9 & 10
Mar 7	No Class – Spring Break	
Mar 14	Standard and Alternative Computational Algorithms Book Review due	Chp 11
Mar 21	Quiz on chapters 7 – 11 Book Review due	
Mar 28	Fractions and Decimals; Ratio and Proportion	Chp 12 & 13
Apr 4	Algebraic Thinking and Geometry	Chp 14 & 15
Apr 11	Measurement; Data Analysis and Probability	Chp 16 & 17
Apr 18	Group Presentations Quiz on chapters 12 -17	
Apr 25	Learning Centers	
May 2	Final Exam	

COURSE ACTIVITIES:

1. **Attend and participate in all classes.** Complete extra assignments. 5 points will be deducted for every unexcused absence. Extra assignments not completed will be treated the same as cut classes. Participation does not mean “showing up for class.” You are expected to contribute in class by being alert, interested, engaged, and cooperative. Expect to both answer and ask questions. Be excited to share your thoughts on mathematics education and your readings. Show that you are prepared. Participate in discussions on the readings.
2. **Read and be prepared to discuss all reading assignments.** You will need to show that you are reading assignments through your discussions in class and electronically, when assigned.
3. **Study for quizzes.** You will have three quizzes on the content of the textbook and related class discussions.
4. **Submit electronic journal responses via e-mail.** You will be told in class of the journal prompts to which you need to respond. Your writing should demonstrate correct spelling, good grammar and appropriate sentence structure. This is not a place to use your "email rules of writing." This is a place to demonstrate your thinking and your appropriate communication of those thoughts. Remember, you will soon be expecting your students to use proper rules of grammar and sentence structure. Journal responses are due no later than 10:00pm Monday evening (the night before class).
5. **Demonstrate the ability to use a word processing program and the Internet.** All written work that is turned in must be done via word processing. Use a 12-point, easy to read font. Do not use all caps. Use 1 and 1/2 " line spacing and 1" margins all around. All written assignments will be graded for proper grammar and composition. If you are at all concerned about your writing ability, visit the Writing Center.
6. **Article reviews.** Summarize and discuss **two** different articles. Each one should focus on a different **process standard**. Use two different editions of *Teaching Children Mathematics*. You must include complete reference information with your review. Each review should be 2 to 3 pages in length. You will be graded on content and style. You will present a summary and your reactions to the class. Due dates: Feb 7 and Feb 14.
7. **Book reviews.** Summarize and discuss how two different children's books can be used to teach mathematics. Each book must focus on a different **content standard**. Include complete reference material. Scan a picture of the book to include in the reference material. Each review should be 2 to 3 pages in length. The summary of the book should be approximately 1 page. The discussion on how to use the book should be 1 to 2 pages. Include activity description. You will be graded on content, style and creativity. You will read the book and present the activity to the class. Due dates: Mar 14 and Mar 21.
8. **Math Lesson.** Plan, prepare and present to the class a math lesson on the concept and grade level of your choice. Submit lesson plan following standard format. Include alignment to PA Standards. You will sign up for a presentation date based on our course calendar. For example, if your lesson addresses probability, you will present on the day that concept is addressed in the syllabus.
9. **Group Project.** Plan, prepare, and present to the class the mathematics curriculum for a given grade level. The presentation must include a brief overview of the curriculum at the grade level, three hands-on whole group learning activities (each addressing a different standard), and a learning center designed by each member of the group.
 - The overview and the whole group activities are a group project and will be awarded a group grade. The overview should be in the form of a powerpoint presentation. The group must submit a list of the activities, the objective for each activity, the cognitive domain, the intelligence being used, and the alignment to the PA Math Standards. (If you intend to teach in New Jersey or another state, you may also include those standards.)
 - The learning centers will be graded individually. Each learning center must have a minimum of three activities based on the same content standard. In addition, there must be a website available for viewing that pertains to the content standard. Each learning

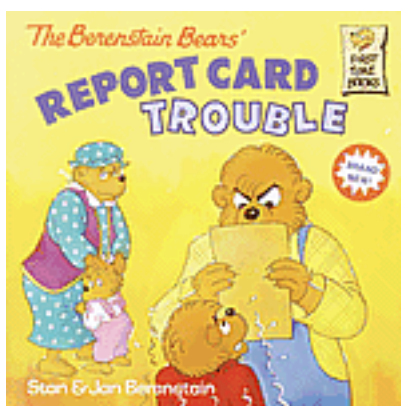
center must represent a different content standard. Each individual must submit a list of activities for the learning center, the objective for each activity, the cognitive domain, the intelligence being used, and alignment to the PA Math Standards.

- The whole group activities and the activities in the learning centers should all be different. See the rubric for further details on grading. Each group will have 2 hours to present. The first hour will be devoted to the brief overview and the whole group activities. The second hour will be used to explore the activities at the learning centers. Students should all expect to do the activities at the centers. Participation is important to your learning.



10. **Complete Pre-Student Teaching Field Experience requirements.** A separate syllabus will be distributed in class prior to the beginning of the field experience. You will be expected to fulfill all the requirements and submit evidence of your performance in a portfolio. In addition your cooperating teacher will complete an evaluation of your competency in accordance with the Pennsylvania School Code Chapter 354. Your College instructors will visit you weekly to monitor your progress. You will keep a daily attendance sheet and submit that as evidence of your attendance at the conclusion of the experience. This experience is expected to totally prepare you for student teaching. You should expect to go beyond the requirements and prove your dedication and work ethic.

COURSE EVALUATION:



Your performance will be assessed in the following areas:

Attendance	-5 points for each unexcused absence
Electronic Journal Entries	8 points (2 points for each entry)
Curriculum Project: Overview & Whole Group Activities	8 points
Curriculum Project Learning Center	15 points
Article Reviews	6 points (3 points for each review)
Book Reviews	6 points (3 points for each review)
Math Lesson	8 points
Quizzes	24 points (8 points for each quiz)
Final Exam	15 points
Pre-Student Teaching Experience	10 points

Your performance in all areas will be graded in accordance with Moravian College's standards of academic achievement as stated in the Student Handbook. The Moravian College policy on academic honesty will be followed. A copy of the policy is included on the Blackboard site and in the Student Handbook. A copy of the College guidelines concerning plagiarism is also included on the Blackboard site.

Fulfilling any given requirement does not automatically guarantee an A or full points for an assignment. A's (full points) are given to those students who go beyond the requirements and expectations. Assignments must show evidence of time, effort, originality, and dedication to the research process. The following grade conversions will be used in determining your recorded letter grade for the course:

94-100 points	A	90-93 points	A-
87-89 points	B+	84-86 points	B
80-83 points	B-	77-79 points	C+
74-76 points	C	70-73 points	C-
67-69 points	D+	64-66 points	D
60-63 points	D-	0-59 points	F