EDSP 463/663
Assessment and Methods in Mathematics for Struggling Students
Spring, 2011 (3 credits)
Monday, 4-6:45 PM
WRB 2021

Instructor:
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Office Hours: Monday – 1:00-4:00 PM and by appointment

Disclaimer: All information in this syllabus is subject to change at the discretion of the instructor.

Course Description: Formal and informal methods for assessing the mathematics skills of struggling students are practiced and evaluated. Assessment results are applied to curriculum and instructional practices. (This course does not fulfill the secondary methods requirement for math education majors.)

Conceptual Framework: In keeping with the four themes that guide teacher preparation at the College of Education, this course is intended to foster 1) a love of learning, 2) development of a strong fund of knowledge, 3) reflective practice, and 4) democracy and multiculturalism.

Required Text: None. Readings will be posted on the course’s WebCT site. In addition students will search for relevant scholarly articles to share with the class.

Attendance: Attendance will not be taken for this course. However, students are responsible for all material, announcements, and other information presented in class, whether in the readings or not. In addition, some graded products will involve class participation.
Make-up Assignments: There are NO guaranteed make-ups for any assignments. When schedule conflicts make attendance for a graded assignment impossible, students are expected to complete those assignments, or take those tests EARLY. After providing appropriate documentation to the instructor, you might be allowed to schedule a make-up, at instructor discretion.

Extra Credit Work: NONE

Disability Accommodations: Students with a documented disability must provide the instructor with a letter from the Disability Resource Center (DRC) stating the appropriate accommodations needed to complete the requirements of this course. Please contact the instructor in advance to discuss how to accommodate specific needs.

Academic Success Services: Your student fees cover usage of the Math Center (784-4433 or www.unr.edu/mathcenter/ <http://www.unr.edu/mathcenter/> ), Tutoring Center (784-6801 or www.unr.edu/tutoring/ <http://www.unr.edu/tutoring/> ), and University Writing Center (784-6030 or www.unr.edu/writing_center <http://www.unr.edu/writing_center> ). These centers support your classroom learning; it is your responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.

Late Assignments: Assignments completed outside of class are due at the BEGINNING of class on the due date. Any late assignments will be penalized one tenth of the total possible point value for each day or part thereof (including holidays and weekends) that the assignment is late, with the following exception: Any outside assignment submitted more than four (4) days late, or after the end of the last class period of this semester, whichever is first, will receive no credit.

Academic Dishonesty: I believe in honor and expect students to behave honorably. "Cheating, plagiarism or otherwise obtaining grades under false pretenses" constitute academic dishonesty according to the code of this university. Academic dishonesty will not be tolerated and penalties can include canceling a student’s enrollment without a grade, giving an F for the course or for the assignment. For more details, see
Course Products:

Class Activities/Participation - There will be several short class activities of various kinds. They may be group activities, written opinions, comments or questions about assigned readings, etc. They cannot be made up if missed.

Case Studies - Students will make assessment and instruction recommendations for two case studies that include narrative, and standardized assessment data. These written assignments must be posted to the appropriate assignment page on WebCampus as a Microsoft Word document (.doc or .docx) attachment. The documents must be double-spaced in 12 point Times New Roman on letter-sized pages with one inch margins. Assignments not submitted or formatted according to instructions will not receive credit.

Math Demonstration Lessons - You will be presenting two short demonstration lessons to your classmates. Each lesson should be only about 10 minutes long. The lesson must involving teaching new content in mathematics (no review lessons), and each lesson must cover different content. You may choose math content at any level, K-12. The object of these lessons is to practice designing and carrying out instruction based solely on posing problems/tasks and asking questions without giving your students mathematics information. In other words, the lesson should help your students to discover new math concepts, rather than simply being told new math concepts. The week after you present each lesson please submit short responses to the following prompts. These written assignments must be posted to the appropriate assignment page on WebCampus as a Microsoft Word document (.doc or .docx) attachment. The documents must be double-spaced in 12 point Times New Roman on letter-sized pages with one inch margins. Assignments not submitted or formatted according to instructions will not receive credit.

1. Give a concise (one sentence) objective for your lesson that indicates specifically what your students will be able to DO when the lesson is done
that they were NOT able to do before the lesson.

2. Give a concise (one sentence) description of the math concept that you want your students to learn from this lesson that they did NOT know before the lesson. The concept should be related to the objective you write for #1.

3. What prerequisite math skills should students have before participating in this lesson?

4. How does your lesson encourage students to gain conceptual understanding in mathematics?

5. Based on your experience, and feedback from classmates, what changes would you recommend for your lesson, and why?

Research Articles - You will find two peer-reviewed journal articles that address mathematics instruction. You will choose two of the following topics, and find one article for each of the two topics you have chosen. The four topics are – counting, math facts, calculation procedures, and problem solving. Each article must:

- Present the results of original research,
- In which students receive mathematics instruction/intervention, and
- The effectiveness of that instruction is assessed.
- Studies that include students who are struggling and/or in special education are preferred but not required.

For each article you will:

- Send an electronic version (preferably in .pdf format) of the article to the instructor for review and posting at least one week before the class discussion and written assignment are due,
- Lead a brief discussion on the article in class based on your responses to the prompts below, and
- Submit written responses for the following prompt on the due date listed on the articles schedule.

Prompts for Written Responses

1. Give a reference for the article. You can use APA format if you are
familiar with that, or use the same format that is used for similar references at the end of your article.

2. Explain why you chose this article.

3. Describe the participants in the study.

4. Describe the instruction/intervention implemented.

5. Describe the basic findings of the study.

6. List at least two additional research questions that are raised by the study.

7. Describe weaknesses you found in the study.

8. Describe how this study might be applied to (your) classroom practice?

These written assignments must be posted to the appropriate assignment page on WebCampus as a Microsoft Word document (.doc or .docx) attachment. The documents must be double-spaced in 12 point Times New Roman on letter-sized pages with one inch margins. Assignments not submitted or formatted according to instructions will not receive credit.

**Final assignment** will consist of thoughtful and scholarly written responses to prompts provided by the instructor. The Final must be submitted to the WebCampus site. These written assignments must be posted to the appropriate assignment page on WebCampus as a Microsoft Word document (.doc or .docx) attachment. The documents must be double-spaced in 12 point Times New Roman on letter-sized pages with one inch margins. Assignments not submitted or formatted according to instructions will not receive credit.
**Alternative Assignments:** If you feel that an assignment done outside of class is not of value to you, you may propose an alternative assignment that you feel would be more appropriate for you. If you and the instructor negotiate an agreement about the alternative assignment, it will be substituted for the original assignment. This option may not be used to change due dates for assignments.

- Unless directed otherwise, written responses generated outside of class should be typed in black print, double-spaced on one side of letter-sized white paper, with one-inch margins, using a clearly legible typeface (e.g. Times) and conventional (12 point) type size. They should be proofed for misspellings and other writing problems.
GRADING
Class activities /participation: 40
  Case studies, 2 @ 20: 40
  Model lessons: 2 @ 20: 40
  Intervention articles, 2 @ 20: 40
  Final: 40

Final Grade Breakdown

  A range: 180 - 200
  B range: 160 - 179
  C range: 140 - 159
  F: 139 and below
TENTATIVE CALENDAR

Note: Model lessons will be scheduled individually throughout the semester.

January 24  First meeting
January 31  Intelligence, NCTM Standards
            Guilford's model of intelligence
            CHC model of intelligence
            NCTM Standards and teacher training
            NCTM Standards and Special Education teachers

February 7  Are we born mathematicians? Mathematical understanding
            Natal numeracy?
            Benny

February 14 Subitizing
            Life span changes in visual enumeration: The number discrimination task
            Aging and counting speed: Evidence for process-specific slowing
            Approximate quantities and exact number words: Dissociable systems
            A cognitive characterization of dyscalculia in Turner Syndrome

February 21 President’s Day – NO CLASS

February 28 Counting: Cognition
            Numerical cognition without words: Evidence from Amazonia
            Young children with specific language impairment and their numerical cognition
            What makes counting count? Verbal and visuo-spatial contributions to typical and atypical number development
            Numerical and arithmetical cognition: A longitudinal study of process and concept deficits in children with learning disability

March 7  Counting: Instruction
            Student Readings
            First Case
March 14  
Spring Break - NO CLASS

March 21  
**Math Facts: Cognition**
Cognitive addition: A short longitudinal study of strategy choice and speed-of-processing differences in normal and mathematically disabled children
Cognitive addition strategy choice and speed-of-processing differences in gifted, normal, and mathematically disabled children
Cognitive addition strategy choice and speed-of-processing differences in young and elderly adults
Alzheimer's disease disrupts arithmetic fact retrieval processes but not arithmetic strategy selection

March 28  
**Math Facts: Instruction**
Student Readings

April 4  
**Calculation: Cognition**
From informal strategies to structured procedures: Mind the gap!
Neuropsychological concomitants of calculation skills in college students referred for learning disabilities
Students’ Semantic, Executive, and Visuospatial Abilities in Mathematical Reasoning of Referred College

April 11  
**Calculation: Instruction**
Student Readings

April 18  
**Mathematics Problem Solving: Cognition**
Mathematical problem solving and working memory . . .
A comparison of updating processes in children . . .
Association between formal operational thought . . .

**Second Case**

April 25  
**Mathematics Problem Solving: Instruction**
Student Readings

*Final Due*
Performance Assessment:

There are five domains represented in the performance assessment program for teacher education at the university. They are described briefly here in terms of the related INTASC standards with some notes about how they may be related to some outcomes and experiences of this course.

**Professionalism**

*Standard 9: Professionalism and Ethical Practice* - The candidate is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.

*Standard 10: Collaboration* - The candidate fosters relationships with school colleagues, parents, and agencies in the larger community to support students’ learning and well-being.

Opportunities to demonstrate competence in this domain can be found in (but are not limited to) classroom behavior, working with classmates, working with colleagues in schools, behavior in local schools, and presentation of work for the course.
Knowledge of Students and Learning Environments

Standard 2: Student Development and Characteristics - The candidate understands how children learn, and can provide learning opportunities that support intellectual, social, and personal development.

Standard 3: Adapting Instruction to Individual Learning Differences - The candidate understands how students differ in their approaches to learning and creates instructional opportunities that are developed for diverse learners.

Opportunities to demonstrate competence in this domain can be found in (but are not limited to) experiences in local schools, and products related to intervention recommendations.

Knowledge of Subject Matter and Planning

Standard 1: Content Knowledge and Foundations - The candidate demonstrates an appropriate depth of knowledge in all relevant subject areas, understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make these aspects of subject matter meaningful to students.

Standard 4: Instructional Strategies - The candidate understands and uses a variety of instructional strategies to plan learning experiences that encourage students’ development of critical thinking, problem solving, and performance skills.

Standard 7: Instructional Planning - The candidate plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

All products and experiences for this course may provide opportunities to demonstrate content knowledge. Classroom experiences and recommendations interventions based on cases may provide opportunities to demonstrate competence in the other two standards.
Delivery and Management of Instruction

Standard 4: Instructional Strategies - The candidate uses a variety of instructional strategies to *deliver learning experiences that* encourage students’ development of critical thinking, problem solving, and performance skills.

Standard 5: Learning Environments, Social Interactions, Behavior Management - The candidate uses an understanding of individual and group motivation and behavior to *create a learning environment* that encourages positive social interaction, active engagement in learning, and self-motivation for all students.

Standard 6: Language and Communication - The candidate uses knowledge of effective verbal, nonverbal and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

Classroom experiences and modeling of instructional approaches directly apply to this domain. Other products and experiences may also be relevant.

Assessment

Standard 8: Assessment - The candidate understands and uses formal and informal assessment strategies to evaluate and ensure the intellectual, social, and physical development of the learner.

Evaluation of formal assessment, recommendations for informal assessment, and classroom experiences will be relevant here.