

Diverse Learners in The Mathematics Classroom
Course Syllabus MAED 628- section 1
Summer 2011
James Madison University

Instructor Information:

Melinda Burchard

Memorial Hall 3205B

burchams@jmu.edu

568-4526 (office), 896-8865 (home)

Please do not call home number before 6 am or after 9 pm.

The most efficient way to communicate is through email or during office hours.

Location/Class days/time:

June 13-24, 12:30-4 pm, Hiner Room, Memorial Hall

Some days in Alternate locations. Watch Blackboard.

Office Hours:

Daily June 13, and June 15-24, Monday-Fridays, 11:15 am to 12:15 pm

Readings

Required Text:

Berch, D.B. and Mazzocco, M.M.M. (2007). Why is math so hard for some children?:

The Nature and origins of mathematical learning difficulties and disabilities. Balitimore:

Paul H. Brookes Publishing.

Recommended Text:

Allsopp, D.H., Kyger, M.M. and Lovin, L.H. (2007). Teaching mathematics meaningfully: Solutions for reaching struggling learners. Baltimore: Paul H. Brookes Publishing.

Fairbbairn, S. and Jones-Vo, S. (2010). Differentiating instructioin and assessment for English Language learners: A Guide for K-12 teachers. Philadelphia: Caslon Publishing.

(This text is very strongly recommended for those with no previous training in English Language learning.)

\$\$ The JMU bookstore and publishing companies sometimes offer rental options.

Additional Readings:

Additional articles and reading assignments will be posted on Blackboard, and noted in the tentative course calendar. *Course participants will be expected to read assignments prior to class in order to participate in in-class and discussions.*

Additional Supplies:

5 gallon-sized plastic zip lock bags. 5 plastic bins or canvas bags are recommended for organization of "intervention bins". Each bin or bag should be large enough for 8 ½" x 11" paper plus math manipulatives.

University Catalog description:

This course is designed to help teachers understand the learning characteristics of struggling and diverse learners in mathematics classrooms and to use the research based instructional strategies which target these learning characteristics. The focus of the course will be learning to work effectively with students with learning disabilities in mathematics as well as English language learners. Prerequisites: MATH 502, MATH 503, MAED 626 and MAED 627.

Course Objectives:

Teachers will understand and know the learning characteristics of struggling and diverse learners in mathematics classrooms. They will be able to select, adapt, evaluate and use a variety of instructional materials and resources and infuse research based instructional strategies which target these learning characteristics into their instruction to better support these learners in classrooms. Teachers will understand, know, and be able to use the five process standards and technology in the teaching and learning of mathematics to diverse learners.

Course Outline:

- Understanding and teaching the big ideas in mathematics
- Barriers and gateways to meaningful mathematics instruction
 - a. Common learning characteristics that make mathematics difficult for struggling and diverse learners
 - b. Curriculum barriers to learning mathematics
 - c. How struggling and diverse learners can learn mathematics
- RTI (Response to Intervention) and its role in addressing the needs of struggling learners in math classes
- Assessment and teaching strategies for making math meaningful
 - a. Making instructional decisions: Determining what and how to teach
 - b. Teaching for initial understanding
 - c. Building proficiency
- The effective use of appropriate technology in the teaching and learning of mathematics for diverse learners.
- The use of the five mathematical processes (problem solving, reasoning, communication, connections, and representations) in the teaching and learning of mathematics for diverse learners.
- Selecting, adapting, evaluating and using a variety of instructional materials and resources, including curriculum materials as well as professional journals and resources.

Note about target populations of learning objectives: The populations to be covered under the course objectives are specifically students with learning disabilities and students who are English Language learners. Some readings and discussion will cover additional exceptionalities (such as giftedness, intellectual disabilities, socio-economic status, and race) as they relate to the role of Math Education Specialist. Students with specific interests beyond the two specific populations of interest are strongly encouraged to focus their large project work on the population of interest.

General Policies and Procedures:

Adding or Withdrawing: Students are responsible for registering for classes and for verifying their class schedules on e-campus. See <http://www.jmu.edu/registrar> for deadlines for adding or withdrawing classes. No exceptions to these deadlines.

Academic Honesty: Making references to the work of others strengthens your own work by granting you greater authority and by showing that you are part of a discussion located within an intellectual community. When you make references to the ideas of others, it is essential to provide proper attribution and citation. Failing to do so is considered academically dishonest, as is copying or paraphrasing someone else's work. The consequences of such behavior will lead to consequences ranging from failure on an assignment to failure in the course to dismissal from the university. Because the disciplines of the Humanities value collaborative work, you will be encouraged to share ideas and to include the ideas of others in our papers. Please ask if you are in doubt about the use of a citation. Honest mistakes can always be corrected or prevented.

The JMU Honor Code is available from the Honor Council Web site: <http://www.jmu.edu/honor/code.shtml>.

Attendance: The attendance policy is strict. It is *your responsibility* to prioritize attendance. Each student is *allowed one free absence*. Additional absences, excessive tardiness, or excessive early departure *will result in lowering of the final grade by 4 points per absence*. If you do miss class, it is YOUR responsibility to obtain notes from a classmate.

Accommodations: If you are a student with a documented disability who will be requesting accommodations in this course, please make sure you are registered with Disability Services (Wilson Hall, Room 107, 568-6705) and provide the course instructor with an Access Plan letter outlining needed accommodations. I will be glad to meet with you privately to discuss your accommodation needs.

Athletics and Religious Holidays:

If you are a member of a traveling JMU athletic team or club team, or if you anticipate absences due to religious holidays, please expect to turn in work *prior* to your absence. (The four point policy does not apply to these absences.) Please meet with me with your schedule on the first day of class to negotiate arrangements for in-class graded work for anticipated absences.

Inclement Weather:

- Decisions to close university operations will be made by the President or a designee. If the decision to close is made, announcements will be made on JMU radio station 1610AM, on <http://www.jmu.edu>, and on area radio and television stations.
- When it is necessary to cancel classes due to weather or other emergency, check Blackboard to see how class time will be rescheduled.

Behavior:

Respectful behavior is expected in all class discussions and activities. Professional dispositions are expected in interactions with classmates and the instructor, emphasizing those communication behaviors appropriate for leading teachers and working as a change agent within schools and school districts, as would be expected of a math education specialist.

JMU uses cell phones for emergency notification, so you may leave cell phones on *silent*; however, please turn off cell phone ringers. During class, refrain from texting and/or using personal computers for purposes unrelated to class content. Texting during class is considered extremely rude and may be considered an honor code violation.

The pet peeves of this instructor are texting during class, disrespect of speakers or peers during class discussions or group activities, and whining. Questions about assignment details are welcome in the last five minutes of each class AFTER students have fully reviewed assignment details as posted in the syllabus and on Blackboard.

Student Supports

- When health or other emergencies occur which challenge attendance or meeting deadlines, contact the Campus Ombudsman, *Jim McConnel* at 540-568-6468, mcconnjw@jmu.edu or linnsa@jmu.edu .
- Support for learning strategies in general is available through JMU's Learning Strategies Instruction first floor of Wilson—568-6705, <http://www.jmu.edu/ods/LRC-LSI.shtml>
- Support for presentations is available through the University Speech Center on the fourth floor of Wilson—568-1759 <http://www.jmu.edu/commcenter/>
- Support for writing is available through the University Writing Center on the fourth floor of Wilson—568-1759, <http://www.jmu.edu/uwc>
- Support for English Language Learning is available through English Language Learner Services on the fourth floor of Wilson, 568-1759, <http://www.jmu.edu/esolservices/>
- Support for students with disabilities is available through Disability Services in Wilson 107, 568-6705, <http://www.jmu.edu/ods/>

Course Specific Policies and Procedures**Course Format:**

Lecture, small groups, in-class engagement with activities and seminar discussions. Active participation is essential.

Oral and Written Communication: It is imperative that all students use correct oral and written communication. I expect professionals to proofread work prior to submitting it for a grade.

- Unless otherwise noted, all written assignments should be 1.5 or double spaced, typed in Arial or Times New Roman 12pt. font.
- Assignments should be free of spelling and grammatical errors.
- Students will be expected to communicate orally in a volume and with clear articulation expected of professionals.

Technology Skills:

Much of this course is managed through Blackboard. For tutorials on how to use Blackboard, go to <http://cit.jmu.edu/cit/training/resources/#Blackboard>

Students are expected to be able to create and use various Microsoft products. Tutorials on Microsoft and other technologies are available at Atomic Learning <http://movies.atomiclearning.com/highed/tutorials> If you have a Mac, it is your responsibility to save assignments in Word or PowerPoint format prior to submission.

Other technologies will be explored in this course. If you miss demonstrations of technology, it is your responsibility to learn to use each type of technology.

Access to a color printer is expected for one class assignment.

Evaluation Methods & Grading Criteria:

Your final grade will be based on the total number of points earned divided by the total number of points possible.

Reminder: This is a Graduate Level class. My expectation is that you should receive an A. Your expectation should be an A as well. Your quality and commitment of work should reflect this Graduate Level of Expectation.

The following grading scale will be used for graduate students:

A = 100 – 90, B+ = 89 – 88, B = 87 – 80, C = 79 – 70, F = >70

Earning grades:

- Grades are weighted as detailed in Blackboard.
- If assignment expectations are unclear, communicate *prior* to the due date.
- Questions about assignment details are welcome during the last five minutes of each class session, **ONLY AFTER** the student has fully reviewed details as posted in the syllabus and on Blackboard.
- Top assignments include excellent insights and reflections; going beyond describing; telling why and how different ideas connect. In the population workshops, you should make **meaningful connections to class discussions and readings.**

Deadlines:

- Unless otherwise indicated, Submit written work by deadline through DIGITAL DROPBOX. Do NOT email assignments or turn them in during class.
- In-Class projects due or presented at the beginning of class on the due date.
- Written documentation from the Office of Disability Services, or the University Ombudsman will be expected for negotiation of flexibility on due dates.
- Large project work submitted late will result in the loss of one letter grade *for each day* (or fraction of a day) that it is late.
- Due to the timed nature of JITT responses and Population Workshops, these will NOT be accepted late.

Formative Feedback is available during office hours on the Choice Expertise projects through Monday, 6/20/11 or if submitted to Digital Dropbox by midnight Saturday 6/18/11. Formative Feedback or brainstorming for ideas is available for Population Workshops during office hours up to two days before the assigned date.

Course Requirements & Assignments (see assignment descriptions below and details in Blackboard):

- Professional Participation 15%
- JITT Responses 10 % / 2 points for each of 5 responses
- Population Workshops 25%
- Expertise CHOICE Project 50%

Assignment Details:

Full details are outlined in Blackboard. Due dates are listed on the course calendar. Grading emphasis for each requirement is based upon levels of Bloom's Taxonomy.

Professional Participation 15 %

Class engagement activities will include lesson adaptation for English Language learners and/or students with specific disabilities, case study analysis, error analysis, and practice in data-driven decision-making. Active Class Participation is essential for full benefit from this class. Points for attendance and participation, will be awarded at the discretion of the instructor emphasizing active engagement, synthesis of information in seminar discussions, professional dispositions in communication and performance, and evaluative reasoning in work with case studies.

Each student is allowed one free absence before attendance counts off. Students who cannot attend the class field trip will count that day as their one free absence.

JITT Responses—Just In Time Teaching 10% 2 points for each of 5 Responses
Respond to any FIVE JITT response days NO LATER THAN THREE HOURS prior to the start of class. JITT Responses submitted AFTER that deadline will NOT be accepted. The purpose of JITT is to gauge student understanding of assigned readings in order to guide responsive instruction. Grading emphasizes comprehension. See Blackboard for JITT questions.

Population Workshops 25% Each student will sign up for ONE specific exceptional population from a list of choices. On the assigned day for that topic, students will present an overview of one exceptional population including characteristics, instructional strategies, and assessment considerations. Color handouts using a template will be provided to each participant and the instructor. Then each will lead classmates in discussion and workshop-style training for an appropriate intervention in working with students with that type of exceptionality or related challenges, including creation of an "intervention bin". The intervention bin will include directions for an intervention, a materials list, and an appropriate assessment rubric or probes with a data sheet. Manipulatives will be demonstrated as part of the workshop but workshop presenters will NOT buy manipulatives sets for each participant.

Expertise CHOICE Project 50%

Students will CHOOSE ONE of three possible tracks to develop professional expertise. Each track includes components to be submitted digitally in writing and components to be presented in-class. All Expertise CHOICE Projects are worth a total of 50% of the course grade with quite varied details of grading breakdown. Grading of choice projects will emphasize evaluation, synthesis and/or creation levels of reasoning. See Blackboard for Assignment and Grading Details specific to each track.

Track One—CHANGE AGENT

This choice is designed to develop your expertise as a leader toward change in implementing evidence-based practices for teaching mathematics to exceptional populations. Students will identify a change needed in teaching mathematics to one or more specific exceptional population(s), research evidence-based practices appropriate to address this need, and propose PERSONAL actions toward the needed change. Ideally, this is a plan that can be implemented toward math specialist objectives or toward establishing one's resume toward such a position.

Track Two—TEACHING CONSULTANT

This choice is designed to develop your expertise as a teaching consultant in integration of mathematics and differentiation of mathematics for exceptional populations. Students will create a proposal for a math-related learning experience. This term, these consultation proposals will be submitted to the Explore More Discovery Museum. Students will complete the proposal template, create at least two sample learning activity materials, describe active engagement and technology plans, and present their proposal to an Explore More Discovery Museum administrator.

Track Three—RESOURCE GUIDE

This choice is designed to develop your expertise concerning teaching mathematics to exceptional populations so you might be a valuable support resource for teachers in your building or district. One early objective of many districts in transitioning to a multi-tiered instructional model is to first evaluate the assessment and/or instructional resources existing in the building or district. Students will compile a detailed list and evaluation of the math assessments and/or intervention resources available in a specific school building or in a school district for a specific grade-level or content area. This list should be compiled in a loose leaf notebook and digitally for presentation to school personnel. Key components are required: name of item, publishing or purchase details of item (in case more are needed), where or with whom it can be located, any training required or recommended prior to use (i.e. Math Their Way workshops, reading of the assessment manual, etc.), and a detailed critique of the evidence for the use of that assessment or intervention including citations.

KEY ASSESSMENT

All students will be assessed based upon the Diversity Key Assessment for the Math Specialists Masters program following this course. While this assessment does not impact grade in this course, it may impact continuation in the program. The Key Assessment is posted in the Syllabus section of Blackboard.

Tentative Calendar:

Student Centered Instruction will be modeled. Therefore, details of course calendar are subject to change. Articles are posted in Course Documents.

NOTE: For each assigned reading, review the standards associated with that topic.

Date	Topics	Readings PRIOR to class	Assignment Deadlines
6/13/11	Syllabus, course expectations Universal Design for Learning learning objectives Research methods workshop		
6/14/11	NOTE DETAILS on DEPARTURE TIME and PLACE Field Trip to Washington DC ETS Symposium STRONG START: Preparing Black Boys for Educational Success, Pre-K to 3rd Grade	<i>Report on Black Males in Education.</i>	
6/15/11	Scaffolding, alignment of objectives with teaching and assessments, RTI overview Coaching teachers in balance of fidelity of practice with responsive teaching, UDL and accommodations Overview of ELL Characteristics, barriers, and teaching responses for ELL, early stages NCTM Process Standards applied to	<i>Integrating Differentiated Instruction and Instructional Design</i> <i>Differentiating for ELL Ch 2-3 if you bought this-- optional</i>	JITT #1

	ELL early stages		
6/16/11	<p>Characteristics, barriers, and teaching responses for ELL, stages continued</p> <p>SIOP strategy overview</p> <p>Math Specialist's role in RTI</p> <p>Issues of RTI for ELL</p> <p>Evaluation of teacher questioning techniques applied to ELL levels.</p> <p>Evaluation of selected instructional and assessment resources for ELLs</p>	<p><i>ELL Supporting Math Literacy</i></p> <p><i>ELL Language Factors</i></p>	<p>JITT #2</p> <p>ELL: [_____]</p>
6/17/11	<p>Overview of Learning Disabilities and ADHD</p> <p>Characteristics, barriers, and teaching responses for language based learning disabilities and ADHD</p> <p>Sequencing big ideas developmentally in CBM</p>	<p><i>Ch 6 Why Math Hard—Math and Reading</i></p> <p><i>Ch. 11 Why Math Hard-- ADHD</i></p>	<p>JITT #3</p> <p>Reading Disabilities and Math: [_____]</p> <p>ADHD: [_____]</p>
6/20/11	<p>Characteristics, barriers, and teaching responses for learning disabilities of mathematics, visual processing, and memory</p> <p>Practice with specific learning strategies</p> <p>Error Analysis</p>	<p><i>Ch 3 Why Math Hard—Dyscalculia</i></p> <p><i>Ch 5 Why Math Hard-- Memory</i></p>	<p>JITT #4</p> <p>Dyscalculia: [_____]</p> <p>Memory: [_____]</p>
6/21/11	<p>Giftedness</p> <p>Evaluations of Texts, Manipulatives and Virtual Manipulatives for</p>	<p><i>Gifted Cognitive Processes</i></p> <p><i>Giftedness overview</i></p>	<p>JITT #5</p> <p>Giftedness: [_____]</p>

	exceptionalities		
6/22/11	Evaluation of specific technologies and curriculum for accommodating needs of diverse learners	<i>Ch 12 Teaching Math—Using Technology</i> <i>Ch 15 Why Math Hard—Math Anxiety</i>	JITT #6
No later than midnight 6/22/11			<i>Written part of Choice Expertise Project Presentations submitted to Digital Drop Box</i>
6/23/11	Students with Intellectual Disabilities in Algebra RTI data-driven decision-making processes Simulated RTI data-driven decision-making	<i>Ch 8 Teaching Math—Making Instructional Decisions</i>	JITT #7
6/24/11	Watch for possible alternate location		<i>Choice Expertise Project Presentations</i>