

Topics in Mathematics Education: Equity Issues in Mathematics Education (15:254:599)
3 Credits

Instructor: Dan Battey, Ph.D.	Email: dan.battey@gse.rutgers.edu
Phone #: (732) 932-7496 ext. 8137	Room: GSE 211
Office Hours: Tue 2:30-4:30 & by appointment Office: GSE 229C	Prerequisites or other limitations: None
Mode of Instruction: <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Seminar <input type="checkbox"/> Hybrid <input type="checkbox"/> Online <input type="checkbox"/> Other	Permission required: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes

Course Goals

By the end of this course, you will have an understanding of theories, methods, and analytical frameworks used to research equity in mathematics education. You will understand the different questions being asked in the field and how scholars approach their work. You will be able to read, analyze, and critique literature in the field as well as find undeveloped areas for future research.

Course Description

599 is a special topics course examining research on equity issues in mathematics education. These equity issues will range from class, race, culture, and gender as they relate to the teaching, learning, and schooling of mathematics education. We will look at how equity is framed within the field of mathematics education, what has been addressed, and what has not been conceptualized. The course will help students understand the literature in the field, critique the extant research literature, and design a research study.

Accommodations

If you need accommodations due to a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible.

Readings

All readings will be provided for you electronically.

GRADING, ASSIGNMENTS AND EXPECTATIONS

Participation: (20%)

Student participation is essential to the success of the course. You are expected to do all of the readings, discuss them in class, and turn in all of the assignments. In addition, you will be asked to participate in activities during the class meetings.

Discussion Leader: (10%)

Once during the semester you will be responsible for leading a class discussion. Your job will be to start the discussion for one class. This entails spending 10-15 minutes discussing important new

constructs. You are then responsible for leading a discussion of the readings for about 30 minutes by posing 3-4 questions to the class. **You need to send me the questions the night before class** so I can give you feedback before the beginning of class.

Group Synthesis Project: (30%)

With a partner, you will choose 5-7 readings around a topic around equity issues in mathematics education. Your task is to synthesize the articles to build a framework for better understanding the topic. For instance, if you choose racial identity, you might build a theoretical framework showing the important facets of identity to examine when studying the intersection of racial identity and mathematics. A second example would be to look at the research literature on teaching practices to support English Language Learners (ELLs) in mathematics. Then you could build a framework encompassing the critical features of instruction when teaching mathematics to ELL students. You will need to write a 5-7 page paper laying out your framework, citing the research you synthesized. Additionally you will need to specify which areas of the framework need more research and what the implications for research or practice are given what you've found.

Individual Project: (40%):

You have the option of writing one of the following:

- A research proposal
- A literature review
- A paper recommending instructional support for a specific student population

Paper Draft: Students will draft a paper. This will not be graded, but you will need to bring it to class during one week.

Final Paper: This 10-15 page paper (double-spaced) should be organized according to the APA guidelines for research papers. Students will rework their previous draft and cite references in the paper. We will talk more specifically in class about what is expected for this paper.

Academic Integrity

The highest standards of academic integrity are expected of all students. The failure of any student to meet these standards may result in suspension or expulsion from the university and/or other sanctions as specified in the academic integrity policies at Rutgers University.

Violations of academic integrity include, but are not limited to: cheating, fabrication, tampering, plagiarism, stealing, or facilitating such activities. The university academic integrity policies are available at the link below:

<http://academicintegrity.rutgers.edu>

If you need Special Accommodations during the course, please see me after the first class.

The grading scale is as follows:

A = 100-93	C+= 79-77
A- = 92-90	C = 76-73
B+= 89-87	C- =72-70
B = 86-83	D = 69-60
B- = 82-80	F = <60

Course Schedule (subject to change depending on weather, pacing, and student learning):

WEEK & DATE	TOPICS & ACTIVITIES	READINGS DUE	ASSIGNMENT DUE
1/22	1. Introductions/Course Expectations 2. Discussion: What is equity? Why not equality? 3. Mathematical Biographies		
1/29	1. Theoretical Perspectives and considerations 2. Reading discussion Masters: Read Gutiérrez and Stinson	Gutiérrez, R. (2010). The sociopolitical turn in mathematics education. <i>Journal for Research in Mathematics Education</i> , 41, 1-32. Hand, V., Penuel, W. R., & Gutiérrez, K. D. (2012). (Re) Framing Educational Possibility: Attending to Power and Equity in Shaping Access to and within Learning Opportunities. <i>Human Development</i> , 55(5-6), 250-268. Nasir, N. S., Snyder, C. R., Shah, N., & Ross, K. M. (2012). Racial storylines and implications for learning. <i>Human Development</i> , 55(5-6), 285-301. Stinson, D. W. (2006). African American male adolescents, schooling (and mathematics): Deficiency, rejection, and achievement. <i>Review of Educational Research</i> , 76(4), 477-506.	

<p>2/5</p>	<p>1. Framing Equitable Mathematics Teaching and Learning</p> <p>Masters: Read Battey and either Bartell or Esmonde</p>	<p>Bartell, T. (2011). Caring, race, culture, and power: A research synthesis toward supporting mathematics teachers in caring with awareness. <i>Journal of Urban Mathematics Education</i>, 4(1), 50-74.</p> <p>Battey, D. (2013). “Good” mathematics teaching for students of color and those in poverty: The importance of relational interactions in instruction. <i>Educational Studies in Mathematics</i>, 82(1), 125-144.</p> <p>Esmonde, I. (2011). Snips and snails and puppy dogs’ tails: Genderism and mathematics education. <i>For the Learning of Mathematics</i>, 31(2), 27-31.</p> <p>Leonard, J., Brooks, W., Barnes-Johnson, J., & Berry, R. Q. (2010). The nuances and complexities of teaching mathematics for cultural relevance and social justice. <i>Journal of Teacher Education</i>, 61(3), 261-270.</p>	
<p>2/12</p>	<p>1. Where did work start on equity? 2. Reading discussion</p> <p>Doctoral: Read first three and choose between Ladson-Billings and Tate</p> <p>Masters: Read Carraher and Gutstein</p>	<p>Apple, M. (1992). Do the Standards go far enough? Power, policy and practice in mathematics education. <i>Journal for Research in Mathematics Education</i>, 23, 421-31.</p> <p>Carraher, T. N., Carraher, D. W., & Schliemann, A. D. (1985). Mathematics in the streets and in schools. <i>British Journal of Educational Psychology</i>, 3, 21-29.</p> <p>Gutstein, E., Lipman, P., Hernandez, P., & de los Reyes, R. (1997). Culturally relevant mathematics teaching in a Mexican American context. <i>Journal for Research in Mathematics Education</i>, 709-737.</p> <p>Ladson-Billings, G. (1997). It doesn’t add up: African-American students’ mathematics achievement. <i>Journal for Research in Mathematics Education</i>, 28, 697–708.</p> <p>Tate, W. F. (1995). Returning to the root: A culturally relevant approach to mathematics pedagogy. <i>Theory into practice</i>, 34(3), 166-173.</p>	

<p>2/19</p>	<p>1. Teacher Educators, Researchers, and Achievement 2. Reading discussion</p> <p>Masters: Read Brewley-Kennedy and one of last two</p>	<p>Brewley-Kennedy, D. N. (2005). The struggles of incorporating equity into practice in a university mathematics methods course. <i>The Mathematics Educator</i>, 16-28.</p> <p>Foote, M. Q., & Gau Bartell, T. (2011). Pathways to equity in mathematics education: How life experiences impact researcher positionality. <i>Educational Studies in Mathematics</i>, 78(1), 45-68.</p> <p>Hanna, G. (1989). Mathematics achievement of girls and boys in grade eight: Results from twenty countries. <i>Educational Studies in Mathematics</i>, 20(2), 225-232.</p> <p>Lubienski, S. T. (2002). A closer look at black-white mathematics gaps: Intersections of race and SES in NAEP achievement and instructional practices data. <i>The Journal of Negro Education</i>, 71(4), 269-287.</p>	
<p>2/26</p>	<p>1. Racial and Gendered Identities in Mathematics 2. Jigsaw Reading – you’ll only be responsible for 3 of the readings 3. Reading discussion</p> <p>Masters: Read either Mendick or Varley Gutierrez, and one additional reading</p>	<p>Berry III, R. Q. (2008). Access to upper-level mathematics: The stories of successful African American middle school boys. <i>Journal for Research in Mathematics Education</i>, 464-488.</p> <p>McGee, E. O., & Martin, D. B. (2011). “You Would Not Believe What I Have to Go Through to Prove My Intellectual Value!” Stereotype Management Among Academically Successful Black Mathematics and Engineering Students. <i>American Educational Research Journal</i>, 48(6), 1347-1389.</p> <p>Mendick, H. (2005). Mathematical stories: why do more boys than girls choose to study mathematics at AS- level in England? <i>British Journal of Sociology of Education</i>, 26(2), 235-251.</p> <p>Stinson, D. W. (2008). Negotiating sociocultural discourses: The counter-storytelling of academically (and mathematically) successful African American male students. <i>American Educational Research Journal</i>, 45(4), 975-1010.</p> <p>Terry, C. L., Sr. (2011). Mathematical counterstory and African American males: Urban math education from a critical race theory perspective. <i>Journal of Urban Mathematics Education</i>, 4(1), 23-49.</p> <p>Varley Gutierrez, M., Willey, C., & Khisty, L. L. (2011). (In)equitable Schooling and Mathematics of Marginalized Students: Through the Voices of Urban Latinas/os. <i>Journal of Urban Mathematics Education</i> 42(2), 26-43.</p>	

<p>3/5</p> <p>1. Culturally Relevant Mathematics Teaching 2. Reading discussion</p> <p>Masters: Read Clark and one of other three</p>		<p>Leonard, J., Napp, C., & Adeleke, S. (2009). The complexities of culturally relevant pedagogy: A case study of two secondary mathematics teachers and their ESOL students. <i>The High School Journal</i>, 93(1), 3-22.</p> <p>Lipka, J., Hogan, M. P., Webster, J. P., Yanez, E., Adams, B., Clark, S., & Lacy, D. (2005). Math in a cultural context: Two case studies of a successful culturally based math project. <i>Anthropology & Education Quarterly</i>, 36(4), 367-385.</p> <p>Matthews, L. E. (2003). Babies overboard! The complexities of incorporating culturally relevant teaching into mathematics instruction. <i>Educational Studies in Mathematics</i>, 53, 61-82.</p> <p>Clark, L. M., Badertscher, E. M., & Napp, C. (2013). African American mathematics teachers as agents in their African American students' mathematics identity formation. <i>Teachers College Record</i>, 115(2).</p>	
<p>3/12</p> <p>1. Professional Development and Teacher Education 2. Reading discussion</p> <p>Doctoral: Read 4 of the 5</p> <p>Masters: Read Battey and Aguirre or Bartell</p>		<p>Aguirre, J. M., Turner, E. E., Bartell, T. G., Kalinec-Craig, C., Foote, M. Q., McDuffie, A. R., & Drake, C. (2012). Making Connections in Practice: How Prospective Elementary Teachers Connect to Children's Mathematical Thinking and Community Funds of Knowledge in Mathematics Instruction. <i>Journal of Teacher Education</i>.</p> <p>Bartell, T. G. (2011). Learning to teach mathematics for social justice: Negotiating social justice and mathematical goals. <i>Journal of Research in Mathematics Education</i>, 41(0), 5-35.</p> <p>Battey, D., Llamas-Flores, S., Burke, M., Guerra, P., Kang, H. J., & Kim, S. H., (in press). ELL policy and mathematics professional development colliding: Placing teacher experimentation within a social, historical, and political context. <i>Teachers College Record</i>, 115(6).</p> <p>Turner, E. E., Drake, C., McDuffie, A. R., Aguirre, J., Bartell, T. G., & Foote, M. Q. (2012). Promoting equity in mathematics teacher preparation: a framework for advancing teacher learning of children's multiple mathematics knowledge bases. <i>Journal of Mathematics Teacher Education</i>, 1-16.</p>	

<p>3/19</p>	<p>SPRING BREAK – NO CLASS!!!</p> <p>Masters: Read Rubel and one of other two</p>	<p>Foote, M. Q., Smith, B. E., & Gellert, L. (2011). Evolution of (urban) mathematics teacher identity. <i>Journal of Urban Mathematics Education</i> 42(2), 67-95.</p> <p>Reed, R. J., & Oppong, N. (2005). Looking critically at teachers' attention to equity in their classrooms. <i>The Mathematics Educator</i>, 1, 2-15.</p> <p>Rubel, Laurie H. & Chu, H. (2012). Reinscribing urban: high school mathematics teaching in low-income communities of color. <i>Journal of Mathematics Teacher Education</i> 15(1), 39-52.</p>	
<p>3/26</p>	<p>1. Institutions 2. Reading discussion</p> <p>Masters: Read any two</p>	<p>Battey, D. (in press). Access to mathematics: A possessive investment in whiteness. <i>Curriculum Inquiry</i>, 43(3).</p> <p>Martin, D. B. (2009). Researching race in mathematics education. <i>The Teachers College Record</i>, 111(2), 295-338.</p> <p>Martin, D. (2007). Beyond missionaries or cannibals: Who should teach mathematics to African American children? <i>The High School Journal</i>, 91(1), 6–28.</p> <p>Oakes, J., Joseph, R., & Muir, K. (2003). Access and Achievement in Mathematics and Science: Inequalities That Endure and Change. In J. Banks & C. Banks (Ed.), <i>Handbook of Research in Multicultural Education, Second Edition</i> (pp. 69-90). San Francisco, CA: Jossey Bass.</p>	
<p>4/2</p>	<p>1. Student Experiences in Classrooms 2. Reading discussion</p> <p>Masters: Read any two</p>	<p>Boaler, J., Wiliam, D., & Brown, M. (2000). Students' experiences of ability grouping- disaffection, polarisation and the construction of failure. <i>British Educational Research Journal</i>, 26(5), 631-648.</p> <p>Esmonde, I. (2009). Ideas and identities: Supporting equity in cooperative mathematics learning. <i>Review of Educational Research</i>. 79(2), 1008-1043.</p> <p>Hand, V. M. (2010). The co-construction of opposition in a low-track mathematics classroom. <i>American Educational Research Journal</i>, 47(1), 97-132.</p> <p>Turner, E., Dominguez, H., Maldonado, L., & Empson, S. (2013). English Learners' Participation in Mathematical Discussion: Shifting Positionings and Dynamic Identities. <i>Journal for Research in Mathematics Education</i>, 44(1), 199-234.</p>	<p>Group Synthesis Project Due</p>

<p>4/9</p>	<p>1. Teaching Mathematics for Social Justice 2. Reading discussion 3. Group Presentations</p> <p>Masters: Read Gutstein and one of other three</p>	<p>Esmonde, I., & Caswell, B. (2010). Teaching mathematics for social justice in multicultural, multilingual elementary classrooms. <i>Canadian Journal for Science, Mathematics, and Technology Education</i>, 10(3), 244-254.</p> <p>Frankenstein, M. (1990). Incorporating Race, Gender, and Class Issues into a Critical Mathematics Literacy Curriculum. <i>The Journal of Negro Education</i>, 59(3), 336-347.</p> <p>Gutstein, E. (2003). Teaching and learning mathematics for social justice in an urban, Latino school. <i>Journal for Research in Mathematics Education</i>, 37-73.</p> <p>Terry, C. L. (2010). Prisons, pipelines and the President: Developing critical math literacy through participatory action research. <i>Journal of African American Males in Education</i>, 1(2), 73-104.</p>	
<p>4/16</p>	<p>1. Student Experiences in Mathematics 2. Reading Discussion 3. Group Presentations</p> <p>Masters: Read Gresalfi and one other reading</p>	<p>Fennema, E., Carpenter, T. P., Jacobs, V. R., Franke, M. L., & Levi, L. W. (1998). Gender differences in mathematical thinking. <i>Educational Researcher</i>, 27(5), 6-18.</p> <p>Gresalfi, M. S. (2009). Taking up opportunities to learn: Constructing dispositions in mathematics classrooms. <i>The Journal of the Learning Sciences</i>, 18(3), 327-369.</p> <p>Terry, C. L., Sr. & McGee, E. O. (2012). "I've come too far, I've worked too hard!" Reinforcement of support structures among Black male mathematics students. <i>Journal of Mathematics Education at Teachers College</i>, 3(2), 73-85.</p> <p>Turner, E. E., & Celedón-Pattichis, S. (2011). Mathematical Problem Solving Among Latina/o Kindergartners: An Analysis of Opportunities to Learn. <i>Journal of Latinos and Education</i>, 10(2), 146-169.</p>	

<p>4/23</p>	<ol style="list-style-type: none"> 1. Schooling, Culture, and Mathematics 2. Reading discussion 3. Group Presentations <p>Masters: Read González and one of other three</p>	<p>Boaler, J., & Staples, M. (2008). Creating mathematical futures through an equitable teaching approach: The case of Railside School. <i>The Teachers College Record</i>, 110(3), 608-645.</p> <p>González, N., Andrade, R., Civil, M., & Moll, L. (2001). Bridging funds of distributed knowledge: Creating zones of practices in mathematics. <i>Journal of Education for Students Placed at Risk</i>, 6(1-2), 115-132.</p> <p>Gutiérrez, R. (2002). Beyond essentialism: The complexity of language in teaching mathematics to Latina/o students. <i>American Educational Research Journal</i>, 39(4), 1047-1088.</p> <p>Nasir, N. S., Hand, V., & Taylor, E. V. (2008). Culture and mathematics in school: boundaries between “cultural” and “domain” knowledge in the mathematics classroom and beyond. <i>Review of Research in Education</i>, 32, 187-240.</p>	<p>Bring Draft of Individual Paper to Class</p>
<p>4/30 AERA – No Class!!!</p>			
<p>5/7</p>	<ol style="list-style-type: none"> 1. Reviews 2. Reading Discussion 3. Discuss Individual Projects <p>Masters: Read DiME only</p>	<p>DiME (2007). Equity issues in mathematics education. In F. Lester (Ed.), <i>Handbook of Research on Mathematics Teaching and Learning</i> (pp. 405-433). Charlotte, NC: Information Age Publishing.</p> <p>Reyes, L., & Stanic, G. (1988). Race, sex, socioeconomic status, and mathematics. <i>Journal for Research in Mathematics Education</i>, 19, 26–43.</p> <p>Secada, W. (1992). Race, ethnicity, social class, language and achievement in mathematics. In D. Grouws (Ed.), <i>Handbook for research on mathematics teaching and learning</i> (pp. 623–660). New York: Macmillan.</p>	<p>Final Individual Papers Due</p>