EDUCATION 263D: CURRICULUM & INSTRUCTION ELECTIVE IN MATHEMATICS
TUESDAYS, 3:00 PM – 5:50 PM
ZOOM MEETING ROOM: 942-7121-1403
PASSWORD: 314159

INSTRUCTOR: MEGAN SELBACH-ALLEN
EMAIL: mselbach@stanford.edu
office hours immediately following class or by email appointment

COURSE OVERVIEW:
This is a condensed overview of mathematics teaching and learning designed to follow a three-course sequence in methods of curriculum and instruction intended for non-mathematics focused secondary teachers. The course aims to provide an opportunity for sustained learning and professional growth. The goals of the course are to help you:

- examine your own knowledge, beliefs, and assumptions about mathematics, teaching, and students,
- increase your knowledge of mathematics and mathematics pedagogy,
- increase your theoretical knowledge and practical experience in planning, teaching, and assessing mathematics,
- address the mathematical needs of a diverse range of students,
- recognize the complexities of diverse, multiple-ability classrooms while broadening your repertoire of teaching techniques, and
- learn from your experiences in schools through informed reflection.

Throughout the course, we will consider the eight Common Core State Standards for Mathematical Practice and the Common Core State Standards for Mathematics content. We will analyze teaching practices in many ways, considering the role played by mathematics, the teacher, and the students. Different examples of practice will be discussed, analyzed and digested through personal reflection. We will also engage in mathematical tasks that will place you as learners of mathematics and pedagogy. We will consider the importance of close and respectful listening to students' mathematical thinking and the value in asking open questions to probe and deepen understanding. There will be a joint focus throughout the course on connecting research and practice.

COURSE REQUIREMENTS:
You are expected to come to class having completed the reading and assignments due for that day and prepared to participate in class discussions and activities. Participation with all sessions is mandatory. Please give ample notice if you will be late, or plan to miss a class. You can request an extension on a due date, requests must be done proactively in a timely manner.

Assignments: *Please turn in all assignments to Canvas or Google Drive by the due date.* File names should include your last name and the assignment title.

- ***Weekly In-class reflections*** due by 10pm on the day of class (should have time to complete during class most weeks)
- ***Lesson Plan Draft or Outline***: due Tuesday, May 4th at 3pm
- ***Annotated Task-Based Lesson Plan***: due Tuesday, June 1st at 3pm

Submitting Assignments:
Students with access to Canvas should submit assignments in Canvas and students without access to Canvas should submit assignments to the google folder with your name. All feedback will be provided digitally within your submitted documents, and either re-posted to Canvas or emailed to you. Please submit all files as Google Docs, unless otherwise specified.

Please save all files using the following naming convention:
Lastname_Assignment. For example: **Selbach-Allen_Task-Based_Lesson_Plan**

Assessments and Grading:
Your grade will be based primarily on the completion of the assignments mentioned in class. Attendance and active contributions to all zoom class activities will also be considered in your final grade. As with all your work in C&I this year, you may revise and resubmit any written assignment for a higher grade.

I expect that you will turn in all assignments by the time/due date posted in Canvas. Please contact me well in advance if you have concerns about completing any assignment on time. Extensions will likely be granted, if requested, but there are university deadlines at the end of the quarter to ensure completion of work prior to graduation that cannot be waived. Late work that is submitted without an extension may be subject to a grade penalty and delayed entry into the grade book.

To earn an A in this class you are required to attend each class (makeup work for excused absences), satisfactorily complete all assignments and actively participate during class. Students missing multiple classes, assignments or not satisfactorily completing work will be awarded lower grades.

Absences:
Absences are for major illness, family emergencies or other comparable extenuating circumstances. In such instances, students are responsible for contacting the instructor before class, and for completing any work missed due to absence. Missing class without communicating may result in a grade penalty as active participation in class is important for the learning of all students.

UNIVERSITY POLICIES:
All Stanford students are expected to follow the **Stanford Honor Code** and **Fundamental Standard**, as noted in the STEP Handbook and Stanford Student Guide. Website: https://communitystandards.stanford.edu/student-conduct-process/honor-code-and-fundamental-standard

Students Needing Academic Accommodations:
Students with an academic accommodation based on the impact of any medical condition must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is

being made. Students should contact the OAE as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: (650) 723-1066, URL: http://studentaffairs.stanford.edu/oae). If you have an undocumented need or something that is not provided by the OAE, please speak with your instructor to reach acceptable terms that will allow you to participate in the course fully, without restriction.

COURSE SCHEDULE:

Session	Topic	Readings	Assignments
1 3/30	Focusing on multiple strategies	Boaler, J. (2015). *Mathematical Mindsets*. Introduction and Chapter 1-3. (optional)	
2 4/6	Big ideas, Learning Objectives, and Concept Mapping	Charles, R. I. (2005). *Big ideas and understandings as the foundation for elementary and middle school mathematics*. Kilpatrick, J., Swafford, J., & Findell, B. (Eds.). (2001). *Adding it up: Helping children learn mathematics*, Chapter 4.	
3 4/13	Assessments and Rubrics	Boaler, (2015). *Mathematical Mindsets*. Chapter 8. Black, et al., (2004). *Working Inside the Black Box: Assessment for Learning in the Classroom*.	
4 4/20	Classroom culture and establishing sociomathematical norms	Jackson, K. J. (2010). *The Social Construction of Youth and Mathematics: The Case of a Fifth-Grade Classroom*. Stein, & Smith, (2011). *5 Practices for Orchestrating Productive Mathematics Discussions*. Introduction. Kazemi, E. (1998). *Discourse that promotes conceptual understanding*.	

5 4/27	Selecting and modifying tasks Launching tasks	Jackson, Shahan, Gibbons & Cobb, (2012). *Launching complex tasks*. Stein, M. K., & Smith, M. (2011). *5 Practices for Orchestrating Productive Mathematics Discussions*. Chapters 1-2. Reinhart, S. (2000). *Never say anything a kid can say!*	
6 5/4	Orchestrating productive mathematical discussions, Part I	TERC. (2012). *Goals for Productive Discussions and Nine Talk Moves*. Stein, & Smith, (2011). *5 Practices for Orchestrating Productive Mathematics Discussions*. Introduction and Chapters 3-6.	***Submit your lesson-plan draft or outline..***
7 5/11	Orchestrating productive mathematical discussions, Part II	Boaler, J. (2015). *Mathematical Mindsets*. Introduction and Chapter 4 - Chapter 5.	
8 5/18	Teaching mathematics to English language learners	Moschkovich, J. (2013). *Principles and Guidelines for Equitable Mathematics Teaching Practices and Materials for English Language Learners*. Chval, K. B., & Chávez, Ó. (2012). *Designing math lessons for English language learners*, pp. 261-265.	
9 5/25	Teaching mathematics with technology	Gee, J. P. (2005, June). *Good Video Games and Good Learning*. Skinner, B. F. (1954). *The Science of Learning and the Art of Teaching*. p. 95 *only.* NCTM. (2008). *The role of technology in the teaching and learning of mathematics*.	
10 6/1	What is an equitable mathematics classroom?	Gutiérrez, R. (2007). *(Re)Defining Equity: The Importance of a Critical Perspective*. Jacobs, et al., (2014). *Warning Signs!*	***Task-Based Lesson Plan (to be clarified soon)*** Due Tuesday, 6/1 at 3pm on Canvas.

READINGS

Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working inside the black box: Assessment for learning in the classroom. *Phi delta kappan*, *86*(1), 8-21.

Boaler, J. *Mathematical Mindsets,* (2015).

Charles, R. I. (2005). Big ideas and understandings as the foundation for elementary and middle school mathematics. NCSM Journal of Mathematics Education Leadership, 8(1), 9-24.

Common Core Standards for Mathematical Practice (2010). (pp. 6-8).

Chval, K. B., & Chávez, Ó. (2012). Designing math lessons for English language learners. *Mathematics Teaching in the Middle School*, *17*(5), 261-265.

Freudenthal, H. (1981). Major problems of mathematics education. *Educational studies in mathematics*, *12*(2), 133-150.

Gee, J. P. (2005, June). Good video games and good learning. In *Phi Kappa Phi Forum* (Vol. 85, No. 2, p. 33). THE HONOR SOCIETY OF PHI KAPPA PHI.

Gutiérrez, R. (2007). (Re)Defining Equity: The Importance of a Critical Perspective. *Improving access to mathematics: Diversity and equity in the classroom*, 37-50.

Jacobs, V. R., Martin, H. A., Ambrose, R. C., Phillip, R. A. (2014). Warning signs! Recognizing three common instructional moves that are generally followed by taking over children's thinking.

Jackson, K. J. (2010). The social construction of youth and mathematics: The case of a fifth-grade classroom. In *Mathematics teaching, learning, and liberation in the lives of Black children* (pp. 185-209). Routledge.

Jackson, K. J., Shahan, E. C., Gibbons, L. K., & Cobb, P. A. (2012). Launching complex tasks. *Mathematics Teaching in the Middle School*, *18*(1), 24-29.

Kazemi, E. (1998). Discourse that promotes conceptual understanding. *Teaching Children Mathematics*, *4*(7), 410.

Kilpatrick, J., Swafford, J., & Findell, B. (Eds.). (2001). *Adding it up: Helping children learn mathematics*. National Research Council.

Moschkovich, J. (2013). Principles and guidelines for equitable mathematics teaching practices and materials for English language learners. *Journal of Urban Mathematics Education*, *6*(1), 45-57.

NCTM. (2008). *The role of technology in the teaching and learning of mathematics*.

Reinhart, S. (2000). Never say anything a kid can say! *Mathematics teaching in the middle school, 5*(8), 478. Reinhart, S. (2000). Never say anything a kid can say! *Mathematics teaching in the middle school, 5*(8), 478.

Skinner, B. F. (1954). The science of learning and the art of teaching. *Cambridge, Mass, USA*, 99-113.

Stein, M. K. & Smith, M. S. (2011). 5 Practices for Orchestrating Productive Math Discussions. *Reston, VA: National Council of Teachers of Mathematics*.

TERC. (2012). Goals for Productive Discussions and Nine Talk Moves. *The Inquiry Project: Bridging Research & PracticeSupported by the National Science Foundation*. Adapted from: Chapin, S. O'Connor, C., & Anderson, N., (2009). *Classroom Discussions: Using Math Talk to Help Students Learn, Grades 1-6. Sausalito, CA: Math Solutions Publication.*