

UCSC  
EDUC 213B: Research and Practice in Mathematics Education  
Fall 2005 READINGS

**Required text:**

Fostering Algebraic Thinking: A Guide for Teachers Grades 6-10. Mark Driscoll (1999).  
Portsmouth, NH: Heinemann.

1. Schoenfeld, A. (2000) Purposes and methods of research in mathematics education. Notices of the American Mathematical Society, June/July 2000, pages 641-649.
2. Battista, M. (1999). The mathematical mis-education of America's youth: Ignoring research and scientific study in education.
3. Schoenfeld, A. (1987) Cognitive science and mathematics education: An overview. In A. Schoenfeld (Ed.) Cognitive science and mathematics education. Hillsdale, NJ: Erlbaum.
4. Erlwanger, S. (1973). Benny's conception of rules and answers in IPI mathematics. JCMB, Vol. 1, No. 2, Autumn 1973.
5. Hughes, M (1986). Piaget under attack. Chapter 2 in Children and Number: Difficulties in learning mathematics, pages 12-23.
6. Confrey, J. (1990). What constructivism implies for teaching. In R. Davis, C. Maher, and N. Noddings (Eds.) Constructivist views on the teaching and learning of mathematics. Reston, VA: NCTM. Pages 108-122.
7. Yackel, E., Cobb, P., Wood, T., Wheatly, G, and Merkel, G. (1990). The importance of social interaction in children's construction of mathematical knowledge. In Cooney, T. and Hirsch, C. (1990). Teaching and Learning Mathematics in the 1990's. Reston, VA: NCTM. Pages 12-21.
8. Forman, E. (1996). Learning mathematics as participation in classroom practice: Implications of Sociocultural theory. In Steffe, Nesher, Cobb, Goldin, and Gree (Eds.) Theories of mathematical learning, pages 115-130.
9. Lampert, M. (1990). When the problem is not the question and the solution is not the answer: Mathematical knowing and teaching. American Educational Research Journal, 27 (1), 29-64.
10. Goos, M. (2004) Learning mathematics in a classroom community of inquiry. Journal for Research in Mathematics Education, Vol. 35, No. 4, 258-291.
11. Schoenfeld, A. (1992). Learning to think mathematically: Problem solving, metacognition, and sense-making in mathematics. In D. Grouws (Ed.), Handbook of Research in Mathematics Teaching and Learning. New York: Macmillan, pp. 334-370.
12. Hiebert, J. and Carpenter, T. (1992). Learning and teaching with understanding. In D. Grouws (Ed.), Handbook of Research in Mathematics Teaching and Learning. New York: Macmillan, pp. 65-97.
13. Hiebert, J. (1990). The role of routine procedures in the development of mathematical competence. In Cooney, T. and Hirsch, C. (1990). Teaching and Learning Mathematics in the 1990's. Reston, VA: NCTM. Pages 31-40.
14. Lamon, S. (1999) Teaching fractions and ratios for understanding, Chapter 1 pages 1-9 and Chapter 2 pages 11-14.
15. Kieran, C. (1992). The learning and teaching of school algebra. . In D. Grouws (Ed.), Handbook of Research in Mathematics Teaching and Learning. New York: Macmillan, pages 390-419.
16. Chazan, D (2000). Beyond formulas in mathematics and teaching. Chapter 3: Towards a "conceptual understanding" of school algebra, pages 59-110. NY: Teachers College Press.
17. Arcavi, A. (1994). Symbol sense: Informal sense-making in formal mathematics. For the Learning of mathematics 14 (3): 24-35.

18. Schoenfeld, A. H. & Arcavi, A. (1988). On the meaning of variable. *Mathematics Teacher*, 81, 420-427.
19. Usiskin, Z. (1988). Conceptions of school algebra and uses of variables. In A. F. Coxford & A. P. Schulte (Eds.), The ideas of algebra. Reston, VA: National Council of Teachers of Mathematics. Pages 8-19.
20. Moschkovich, J.N, Schoenfeld, A., and Arcavi, A. (1993). Aspects of understanding: On multiple perspectives and representations of linear relations, and connections among them. In T.A. Romberg, E. Fennema and T.P. Carpenter (Eds.), Integrating Research on the Graphical Representation of Function. Hillsdale, NJ: Erlbaum. Pages 69-100.
21. Moschkovich, J.N. (2000) Learning mathematics in two languages: Moving from obstacles to resources. In W. Secada (Ed.), *Changing Faces of Mathematics (Vol. 1): Perspectives on multiculturalism and gender equity*. Reston, VA: NCTM. Pages 85-93.
22. Moschkovich, J.N. (1999) Supporting the participation of English language learners in mathematical discussions. *For the Learning of Mathematics* 19(1), 11-19.
23. Brenner, M. (1994). A communication framework for mathematics classrooms: Exemplary instruction for culturally and linguistically diverse students. In Language and Learning: Educating linguistically diverse students, B. McLeod (Ed.), pages 233-268. Albany: SUNY.

#### Readings for Interviews

24. Lowery, L. (1974). Proportional reasoning. In Lowery, *Learning About Learning Series*. Berkeley, CA: Univ. of California. Pages 17-20 and 37-38.
25. Cramer, K., Post, T., Currier, S. (1993). Learning and teaching ratio and proportion: Research implications. In D. Owens (Ed.) *Research ideas for the classroom: Middle grades mathematics*. NY, NY: Macmillan Publishing Company.
26. Understanding ratio and proportion. Chapter 13 in G. Cathcart, Y. Pothier, J. Vance, and N. Bezuk (Eds.) *Learning mathematics in elementary and middle schools*.

#### Readings for research paper

Chapters from D. Grouws (Ed.), *Handbook of Research in Mathematics Teaching and Learning*. New York: Macmillan.

27. Rational number: Behr, M., Harel, G., Post, T., and Lesh, R. (1992) Rational number, ratio, and proportion (pages 296-333).
28. Geometry: Clements, D. and Battista, M (1992). Geometry and spatial reasoning (pages 420-464).
29. Probability and statistics: Shaughnessy, M. (1992). Research on Probability and statistics: Reflections and directions (pages 465-494).
30. Functions, calculus, limits, proof: Tall, D. (1992). The transition to advanced mathematical thinking: Functions, limits, infinity and proof (pages 420-464).