

## REFERENCES

- Aepinus, F. U. T. (1979). Essay on the Theory of Electricity and Magnetism (1759) (Connor, P. J., Trans.) Princeton, NJ: Princeton University Press.
- Bateson, G. (1972). Steps to an Ecology of Mind: Ballantine Books
- Bettencourt, A. (1993). The Construction of Knowledge: A Radical Constructivist View. In K. Tobin (Ed.), Constructivism: The practice of constructivism in science education, (pp. 39 - 50). Washington, DC: AAAS.
- Borges, A. T., & Gilbert, J. K. (1998). Models of magnetism. International Journal of Science Education, **20**(3), 361-378.
- Bowers, J., Cobb, P., et al. (1999) The Evolution of Mathematical Practices: A Case Study Cognition and Instruction **in press**
- Brown, J. S., Collins, A., et al. (1989) Situated Cognition and the Nature of Learning Educational Researcher **18** (1) pp. 32-42
- Chi, M. and VanLehn, K. (1991) The Content of Physics Self-Explanations Journal of the Learning Sciences **1** pp.69-105
- Chi, M., Bassok, M., et al. (1989) "Self-Explanations: How Students Study and Use Examples in Learning to Solve Problems" Cognitive Science **13** pp. 145-182
- Cobb, P. (1992) Where Is the Mind? Constructivist and Sociocultural Perspectives on Mathematical Development. Educational Researcher, **23**(7), 13-20.
- Cobb, P. (1996a) "Where is the mind? A coordination of sociocultural and constructivist perspectives" In C. T. Fosnot (Ed.), Constructivism: Theory, Perspectives, and Practice, (pp. 34-52): Teachers College Press
- Cobb, P. (1996b) "Accounting for Mathematical Learning in the Social Context of the Classroom" (Unpublished report)
- Cobb, P., & Bowers, J. (1999). Cognitive and situated learning perspectives in theory and practice. Educational Researcher, **28**(2), pp. 4-15.
- Cole, M. (1996) Cultural Psychology - A once and future discipline Cambridge, Massachusetts, The Belknap Press of Harvard University Press
- Descartes, R. (1644). Principia philosophiae (1644) part IV, sections 133-183. Paris
- diSessa, A. (1988) "Knowledge in Pieces", in Constructivism in the Computer Age G. Forman and P. Pufall, Ed.
- diSessa, A. A. (1990) Toward an Epistemology of Physics Institute for Research on Learning.
- diSessa, A., Hammer, D., et al. (1991) Inventing Graphing: Meta-Representational Expertise in Children Journal of Mathematical Behavior **10** pp.117-160
- Duit, R. and Treagust, D. (1998) "Learning in Science -- From Behaviorism Towards Social Constructivism and Beyond", in International Handbook on Science Learning

- Enyedy, N., Vahey, P., & Gifford, B. (1997, ) Active and Supportive Computer-Mediated Resources for Student-to-Student Conversations Paper presented at the Computer Support for Collaborative Learning Conference 1997, Toronto, Canada December 10-14.
- Gilbert, W. (1600). On the Magnet. New York: Basic Books.
- Gillmor, C. S. (1971). Coulomb and the Evolution of Physics and Engineering in Eighteenth Century France. Princeton, NJ: Princeton University Press.
- Goldberg, F. (1997, ) "Constructing Physics Understanding in a Computer-Supported Learning Environment" Paper presented at The Changing Role of Physics Departments in Modern Universities: Proceedings of ICUPE, College Park, Maryland August, 1997
- Goldberg, F. and Johnson, A. (1997) Student Construction of a Model of Magnetic Materials Presentation to American Association of Physics Teachers, August 14, Denver, Colorado.
- Hammer, D. (1994). Epistemological Beliefs in introductory physics. Cognition and Instruction, **12**, pp. 151 - 183.
- Harrington, R. (private communication)
- Hatano, Giyoo (1996) Model of social influences in a science classroom, colloquium presentation, SDSU
- Heritage, J. (1984). Garfinkel and Ethnomethodology. Cambridge, MA: Basil Blackwell Inc.
- Holthuis, N. (1998) Talking Science, Talking School: How do Students Negotiate these Conflicting Discourses? Paper presented at NARST annual meeting, 1998. San Diego
- Home, R. W. (1979). Introduction to Aepinus's essay In Aepinus's essay on the theory of electricity and magnetism (pp. 3-226). Princeton, NJ: Princeton University Press.
- Hutchins, E. (1995) Cognition in the Wild Cambridge, MA, The MIT Press
- Kelly, G. and Crawford, T. (1996) Students' Interaction with Computer Representations: Analysis of Discourse in Laboratory Groups Journal of Research in Science Teaching **33** (7) pp. 693-707
- Kraus, P. (1995) Chapter 8: Magnets and Charge, Promoting Active Learning in Lecture-Based Courses: Demonstrations, Tutorials, and Interactive Tutorial Lectures, : Unpublished doctoral dissertation from the University of Washington.
- Kuhn, T. (1970). The Structure of Scientific Revolutions: University of Chicago Press
- Latour, B. (1986). Visualizing and Cognition: Thinking with eyes and hands. Knowledge and Society: Studies in the sociology of culture past and present **6**, 1-40.
- Latour, B., & Woolgar, S. (1979). Laboratory life - the social construction of scientific facts. Beverly Hills: Sage Publications.

- LeCompte, M. D., & Preissle, J. (1993). Ethnography and Qualitative Design in Educational Research. (Second ed.). San Diego, CA: Academic Press, Inc.
- Lehrer, R., & Schauble, L. (in press). The inter-related development of inscriptions and conceptual understanding. In P. Cobb (Ed.), Symbolizing, communicating, and mathematizing: Perspectives on discourse, tools, and instructional design. Mahwah, NJ: Erlbaum
- Lemke, J. (1995) Textual Politics: Discourse and Social Dynamics Bristol, PA, Taylor & Francis
- Lemke, J. L. (1990). Talking Science: Language, Learning, and Values. Norwood NJ: Ablex Publishing Corp.
- Maloney, D. (1985). Charged Poles? Physics Education, **20**, 310-316.
- Mattis, D. C. (1965). The Theory of Magnetism. New York: Harper and Row.
- McDermott, L. C. (1984). Research on conceptual understanding in physics. Physics Today (July '84).
- McDermott, L. C. (1991). Millikan Lecture 1990: What we teach and what is learned - closing the gap. American Journal of Physics, **59**(4), 301 - 315.
- Meira, L. (1995) The Microevolution of Mathematical Representations in Children's Activity Cognition and Instruction **13** (2) pp.269-313
- Milne, A. A. (1926) The House at Pooh Corner New York, E. P. Dutton (from chapter VI, In Which Pooh Invents a New Game and Eeyore Joins In, page 94).
- Minstrell, J. (1991) " Facets of students' knowledge and relevant instruction", in Research in Physics Learning: Theoretical Issues and Empirical Studies Proceedings of an International Workshop at University of Bremen R. G. Duit Fred; and Niedderer, Hans, Ed. Kiel, Germany, IPN pp. 110-128
- Minstrell, J., & Stimson, V. (1992). Creating an Environment for Reconstructing Understanding and Reasoning. In Conference on Curriculum and Assessment Reform in Education, ED375104 (pp. 25). Boulder, Colorado: ERIC Document.
- National Committee on Science Education Standards and Assessment, (1996) National Science Education Standards Washington, DC, National Academy Press
- Needham, J. (1954). Science and Civilization in China. Cambridge, England: University Press.
- Niedderer, H., & Goldberg, F. (1995) Learning Pathways and Knowledge Construction, (University of Leeds): European Conference on Research in Science Education
- Norman, D. A. (1994). Things that make us smart -Defending human attributes in the age of the machine. Reading, Mass: Addison Wesley.
- Roth, W.-M. (1995) Affordances of Computers in Teacher-Student Interactions: The Case of Interactive Physics Journal of Research in Science Teaching **32** (4) pp.329-347

- Roth, W.-M., & McGinn, M. K. (1998). *Inscriptions: Toward a Theory of Representing as Social Practice*. Review of Educational Research, **68**(1), pp. 35-59
- Scott, P. (1992) "Pathways in Learning Science: A Case Study of One Student's Ideas Relating to the Structure of Matter" In R. Duit, F. Goldberg, & H. Niedderer (Eds.), Research in Physics Learning: Theoretical Issues and Empirical Studies Proceedings of an International Workshop at University of Bremen, (pp. 203 - 224) Kiel, Germany: IPN
- Scott, P., Asoko, H. M., & Driver, R. (1992) "Teaching for Conceptual Change: A Review of Strategies" In R. Duit, F. Goldberg, & H. Niedderer (Eds.), Research in Physics Learning: Theoretical Issues and Empirical Studies Proceedings of an International Workshop at University of Bremen, (pp. 310-329) Kiel, Germany: IPN
- Sfard, A. (1998) "On Two Metaphors for Learning and the Dangers of Choosing Just One" Educational Researcher **27** (2) pp. 4-13
- Shore, B. (1996) Culture in Mind: cognition, culture, and the problem of meaning New York, Oxford University Press
- Smith, J. P., diSessa, A. A., et al. (1993) "Misconceptions Reconceived: A Constructivist Analysis of Knowledge in Transition" Journal of the Learning Sciences **3** (2) pp. 115-163
- Sprod, T. (1997) "Structure and Analysis of Social Constructivist Whole Class Discussions" International Journal of Science Education **19** (9) pp. 911-924
- Spurgin, B. (1990). Plus and Minus, Glass and Resin, Electrons and Cathode Rays School Science Review, *72*(259), 65-77.
- Tricker, R. A. R. (1965). Early Electrodynamics - The First Law of Circulation. Oxford: Pergamon Press.
- von Glasersfeld, E. (1991). A Constructivist View of Learning and Teaching. In R. Duit, F. Goldberg, & H. Niedderer (Eds.), Research in Physics Learning: Theoretical Issues and Empirical Studies Proceedings of an International Workshop at University of Bremen, (pp. 29-39). Kiel, Germany: IPN.
- Vygotsky, L. S. (Ed.). (1978). Mind In Society - The development of higher psychological processes. Cambridge, Mass: Harvard University Press
- Yackel, E., & Bowers, J. (1997). Comparing Individual and Collective Mathematical Activity Across Two Teaching Experiments, AERA 1997, (pp. 41). Chicago, Ill.
- Yackel, E., Cobb, P., & Wood, T. (1991). Small-Group Interactions as a Source of Learning Opportunities in Second-Grade Mathematics. Journal for Research in Mathematics Education, **22** (5), 390-408.
- Yackel, E., & Cobb, P. (1996). Sociomathematical Norms, Argumentation, and Autonomy in Mathematics. Journal for Research in Mathematics Education, **27**(4), 458-477