INFUSING PEDAGOGICAL CONTENT KNOWLEDGE INTO A PHYSICS COURSE FOR FUTURE ELEMENTARY TEACHERS

REFERENCES CITED

- ACEI. (1997). Preparation of elementary teachers: A position paper. *Childhood Education*, 73(3), 166-167.
- Arons, A. B. (1976). Cultivating the capacity for formal reasoning. American Journal of Physics, 44, 834.
- Baird, J. R., Fensham, P. J., Gunstone, R. F., & White, R. T. (1991). The importance of reflection in improving science teaching and learning. *Journal of Research in Science Teaching*, 28, 163-182.
- Barman, C. (1997). The learning cycle revisited: A modification of an effective teaching model: Monograph 6. Washington, DC: Council for Elementary Science International.
- Barnet, J., & Hodson, D. (2001). Pedagogical Context Knowledge: Toward a fuller understanding of what good teachers know. *Science Education*, 85, 426-453.
- Beeth, M. E. (1998). Teaching for conceptual change: using status as a metacognitive tool. *Science Education*, 83, 343-356.
- Bennett, A., Moore, T., & Nguyen, X. (2011). A Longitudinal Study on Students' Development and Transfer of the Concept of Integration. Paper presented at the 2011 Annual Conference and Exposition, American Society for Engineering Education, Vancouver, British Columbia, Canada.
- Blank, L. M. (2000). A Metacognitive Learning Cycle: A better warranty for student understanding? *Science Education*, 84, 486-506.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (1999). *How People Learn: Brain, Mind, Experience, and School.* Washington, DC: National Academy Press.
- Chen, J., & Warren, S. (2011). Work in Progress: Higher-Level-Learning Enhancements to Online Assignments in an Electrical Engineering Linear Systems Course. Paper presented at the Frontiers in Education Conference, Rapid City, SD.
- Chen, J., Warren, S., Nguyen, D., Rebello, N. S., & Bennett, A. (2011). *Teaching-Learning Interviews to Understand and Remediate Student Difficulties with Fourier Series Concepts.* Paper presented at the 2011 Annual Conference and Exposition, American Society for Engineering Education, Vancouver, British Columbia, Canada.
- Clark, C. M. (1988). Asking the right questions about teacher preparation: Contributions of research on teacher thinking. *Educational Researcher*, 17(1), 30-51.
- Clark, D. L., & Marker, G. (Ed.). (1975). *The institutionalization of teacher education*. Chicago: University of Chicago Press.
- Cremin, L. (1978). *The education of the educating professions*. Paper presented at the The 19th Charles W. Hunt Lecture, Chicago, IL.
- DeBoer, G. (1991). A history of ideas in science education. New York: Teachers College Press.
- Donnelan, K. (1982). NSTA elementary teacher survey on pre-service preparation of teachers of science at the elementary, middle and high junior school levels. Washington, DC: National Science Teachers Association.
- Driver, R., Guesne, E., & Tiberghien, A. (Eds.). (1985). *Children's Ideas In Science*. Milton Keynes: Open University Press.
- Dubinsky, E., & Harel, G. (1992). The nature of the process conception of function. In E. Dubinsky & G. Harel (Eds.), *The concept of function: Aspects of epistemology and pedagogy* (pp. 85-106).
- Elby, A. (2001). Helping students learn how to learn. *Physics Education Research: A Supplement to the American Journal of Physics*, 69(7), S54-S64

- Feiman-Nemser, S. (1990). Teacher preparation: Structural and conceptual alternatives. In W. R. Houston (Ed.), *Handbook of Research on Teacher Education* (pp. 212-233). New York: Macmillan.
- Fensham, P. (1992). Science and Technology. In P. Jackson (Ed.), *Handbook of research on curriculum* (pp. 789-829). New York: Macmillan.
- Fuller, R. G. (1980). Multidisciplinary Piagetian-based programs for college freshmen. *ADAPT University of Nebraska, Lincoln*.
- Gabel, D. L. (Ed.). (1994). *Handbook of Research on Science Teaching and Learning*. New York: Macmillan Publishing Company.
- Gire, E., Nguyen, D., & Rebello, N. S. (2011). Characterizing Students' Use of Graphs in Introductory Physics with a Graphical Analysis Epistemic Game. Paper presented at the 2011 National Association for Research in Science Teaching Annual Meeting Orlando, FL.
- Goldberg, F., Robinson, S., & Otero, V. (2006). *Physics for Elementary Teachers*. Armonk, NY: It's About Time.
- Good, R. G. (1989). *Toward a unified conception of thinking: Prediction within a cognitive science perspective.* Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, San Francisco, CA.
- Gregory, E., & DeTure, L. (1992). A program to improve elementary teachers' preparation in science, Cambridge, MA.
- Halloun, I. (1997). *Views about science and physics achievement: The VASS story*. Paper presented at the The Changing Role of Physics Departments in Modern Universities: Proceedings of the International Conference on Undergraduate Physics Education (ICUPE),, College Park, MD.
- Harlow, D. B., Swanson, L. H., Dwyer, H. A., & Biachini, J. A. (2010). *Learning Pedagogy in Physics*. Paper presented at the 2010 Physics Education Research Conference, Portland, OR.
- Hennessey, M. (1991). Analysis of conceptual change and status change in sixth graders' concepts of force and motion. Ph.D., University of Wisconsin Madison, Madison, WI.
- Hennessey, M. (1993). Students' ideas about their conceptualization: The elicitation through instruction. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, Atlanta, GA.
- Hewson, P. W., & Hewson, M. (1988). An appropriate conception for teaching science: A view from studies of science learning. *Science Education*, 72, 597-614.
- Hewson, P. W., & Thorley, N. R. (1989). The conditions for conceptual change in the classroom. *International Journal of Science Education*, 11, 541-553.
- Hollingsworth, S. (1989). Prior beliefs and cognitive change in learning to teach. *American Educational Research Journal*, 26, 160-189.
- Howey, K. R. (1983). Teacher Education: An Overview. In K. R. G. Howey, W.E. (Ed.), *The education of teachers* (pp. 6-37). New York: Longman.
- Hurd, P. (1983). State of precollege education in mathematics and sciences. *Science Education*, 67(1), 57-67.
- Inhelder, B., & Piaget, J. (1958). The growth of logical thinking from childhood to adolescence. New York: Basic Books.
- Inhelder, B., Piaget, J. (1969). *The Early Growth of Logic in the Child*. New York, NY: W. W. Norton & Company, Inc.
- Karplus, R. J. (1974). Science teaching and development of reasoning. *Journal for Research in Science Teaching*, 12, 213-218.
- Lavoie, D. (1992). The effects of adding a prediction/discussion phase to the science learning cycle. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, Boston, MA.

- Lortie, D. C. (1975). Schoolteacher: A Sociological Study. Chicago: University of Chicago Press.
- Marek, E., & Methven, S. (1991). Effects of the learning cycle upon student and classroom teacher performances. *Journal of Research in Science Teaching*, 28, 41-53.
- Mazur, E. (1997). Peer Instruction: A User's Manual. Upper Saddle River, NJ: Prentice-Hall.
- McCombs, B. L. (1996). Alternative perspectives for motivation. In L. Baker, Afflerback, P, and Reinking, D (Ed.), *Developing engaged readers in school and home communities*. Mahwah, NJ: Erlbaum.
- McDermott, L. C. (1996). Physics by Inquiry (Vols. I & II). New York: Wiley.
- McDiarmid, G. W., Ball, D. L., & Anderson, C. W. (1989). When staying one chapter ahead doesn't really work: Subject-specific pedagogy. In M. Reynolds (Ed.), *Knowledge base of beginning teachers* (pp. 193-205). New York: Pergamon.
- Morrisey, J. (1981). An analysis of studies on changing the attitude elementary student teachers toward science and science teaching. *Science Education*, 65, 157-177.
- Nespor, J. (1987). The role of beliefs in the practice of teaching. *Journal of Curriculum Studies*, 19, 317-328.
- Nguyen, D., Gire, E., & Rebello, N. S. (2010). Facilitating Students' Problem Solving Across Multiple Representations in Introductory Mechanics. *Proceedings of the 2010 Physics Education Research Conference*.
- Nguyen, D., & Rebello, N. S. (2011a). Students' Difficulties with Integration in Electricity. *Physical Review Special Topics Physics Education Research*, in press.
- Nguyen, D., & Rebello, N. S. (2011b). Students' Understanding and Application of the Area Under the Curve Concept in Physics Problems. *Physical Review Special Topics Physics Education Research*, in press.
- NRC. (1996). National Science Education Standards. Washington, DC: NAP.
- Pintrich, P. R., Schunk, D. (1996). *Motivation in Education: Theory, Research and Application*. Columbus, OH: Merrill Prentice-Hall.
- Posner, B., Strike, K., Hewson, P., & Gertzog, W. (1982). Accommodation of a scientific conception: Toward a theory of conceptual change. *Science Education*, 66, 211-227.
- Richardson, V. (1991). The relationship between teachers' beliefs and practices in reading comprehension instruction. *American Educational Research Journal*, 28, 559-586.
- Rutherford, F. J., & Ahlgren, A. (1990). Science for All Americans. Oxford: Oxford University Press.
- Scharmann, L. (1992). *Teaching evolution: the influence of peer instructional modeling*. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, Boston, MA.
- Settlage, J. (2000). Understanding the learning cycle: Influences on abilities to embrace this approach by preservice elementary school teachers. *Science Education*, 84, 43-50.
- Shrigley, R. L. (1974). The attitude of pre-service elementary teachers toward science. *School Science and Mathematics*, 74, 243-250.
- Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4-14.
- Stake, R. E., & Easley, J. A. (1978). *Case Studies in Science Education*. Washington, DC: U.S. Government Printing Office.
- Stengel, B. S. (1992). *The reform agenda*. Paper presented at the American Educational Research Association, San Francisco, CA.
- Sunal, D. W. (1982). Affective predictors of pre-service science teaching behavior. *Journal of Research in Science Teaching*, 19, 167-175.
- Tamir, P. (1983). Inquiry and the science teacher. Science Education, 67, 657-672.

- White, R. T., & Tisher, R. P. (1986). Research on natural sciences. In M. C. Wittrock (Ed.), *Handbook on research on teaching* (pp. 874-905). New York: Macmillan.
- White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review 66*, 297-333.
- Wilson, S. M. (1990). The secret garden of teacher education. Phi Delta Kappan, 72, 204-209.
- Zollman, D. A. (1974). The physics activities center -- a mini-exploratorium. *The Physics Teacher*, 12, 213.
- Zollman, D. A. (1990). Learning cycles for a large-enrollment class. *The Physics Teacher*, 28(1), 20-25.