DOCTORAL DISSERTATIONS

Children's Books and The Nature of Science: A Multisite Naturalistic Case Study of Three Elementary Teachers in the Rural Southeast

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Abstract
This naturalistic case study describes the efforts of three elementary teachers in a rural southeastern school to use children's books in support of inquiry-based science and specifically addresses issues related to the nature of science. Data were collected through 26 classroom and meeting observations, 16 semi-structured and informal interviews, 35 documents and 76 children's books used by the teachers. Three themes were identified related to the nature of science and the selection and use of children's books in the teachers' second, fourth, and fifth grade classrooms.

1. Science was portrayed as a human endeavor that connects to the lives of people and that involves fascination, passion, and interest; imagination and creativity; values; and diverse views. The collection of books was analyzed to look specifically at race, culture, and gender issues. While women, people of color, and different cultures were represented in the book collection, they were not represented well when considering the collection as a whole.
2. Books and the teachers' use of them supported firsthand investigation of the natural world and the idea that empirical evidence underlies scientific understanding. This theme involved observation and journaling, identification of questions to investigate and procedures to use, reasonable interpretations of results, and inferential thinking.
3. Books helped teach about the durable body of scientific knowledge we have discovered over time. They were used to broaden background knowledge and as references after firsthand investigations.

The complexity of science education is revealed in these cases. The teachers were able to artfully balance multiple aspects of the nature of science in their book selection and presentation. Particularly promising aspects include their work to use fiction and poetry to promote connections between imagination, creativity and science and their innovative use of books to help students interpret data and infer. Important aspects of the nature of

science were not addressed in these themes—including the tentative nature of knowledge, the unknowns we have about the natural world, and an understanding of scientific theories and laws. Issues of race, culture, and gender in the books revealed the crucial need to help teachers embrace critical ways of thinking.

How Gertrude Teaches Her Children: An Attempt to Help Mothers to Teach Their Children and an Account of the Method (London: S. Sonnenschein; Syracuse, NY: C.W. Bardeen, 1894), by Johann Heinrich Pestalozzi, ed. by Ebenezer Cooke, trans. by Lucy E. Holland and Francis C. Turner. multiple formats at archive.org. Elementary and middle-class instruction in the Netherlands, and their development in accordance with the laws of 13th August 1857 (elementary instruction) and 2d May 1863 (middle-class instruction). Published by the Royal commission of the Netherlands. (Leyden : A. W. Sythoff, 1876), by Wereldtenoonstelling te Philadelphia Netherlands. Our social studies books for elementary students brings a new experience into classroom. In a Response Group activity, students work in small groups to investigate three case studies of communities faced with specific environmental problems. Reading Further: Finding New Sources of Energy. 16. Making a Difference in the World Essential Question: How can we help the world around us? Keywords. Science Teaching Science Teacher Content Knowledge Pedagogical Content Knowledge Heat Energy. Cognitive research and the design of science instruction, Educational Psychologist, 17(1), 31–53.Google Scholar. Clermont, C. P., Krajcik, J. S. and Borko, H. (1993). The influence of an intensive inservice workshop on pedagogical content knowledge growth among novice chemical demonstrators, Journal of Research is Science Teaching, 30(1), 21–44.Google Scholar. Clermont, C., Borko, H., and Krajcik, J. (1994). A new look at elementary school science. Science curriculum improvement study, Chicago, Rand McNally.Google Scholar. Keuthe, L J. (1963). Science concepts: A study of sophisticated errors, Science Education. (47), 361–364.Google Scholar.