

Sasithorn Soparat 2008: Developing and Using a Professional Development Model for Enhancing Thai Elementary Science Teacher Teaching: A Reflective, Inquiry-Based Approach. Doctor of Philosophy (Science Education), Major Field: Science Education, Department of Education. Thesis Advisor: Associate Professor Bupphachart Tunhikorn, Ph.D. 384 pages.

The aim of this study was to investigate the effect of developing and using a reflective, inquiry-based professional development model that consisted of a three-day workshop and three months of sustained contact modified lesson study. This model was designed to serve Pathum Thani teachers' needs with respect to improving inquiry teaching, improving analysis of the core curriculum, writing lesson plans, and working collaboration in the school context. In this study, four teachers participated in a case study and provided insight into the effect of the reflective, inquiry-based professional development model on their understanding and practice of inquiry. This interpretive case study drew from data of questionnaires, interviews, journal entries, case reactions, classroom cases, metaphors, field notes, and teacher artifacts. Constant comparative method was used to analyze data. This involved coding, categorizing and comparing to develop emergent patterns of teacher change through the professional development.

The use of the reflective, inquiry-based professional development model effected changes in the four teachers' understanding, beliefs, and practice of inquiry. Inquiry opportunities involving the 5E learning cycle of engaging, exploring, explaining, extending/elaborating, and evaluating enhanced teachers' understanding of earth science concepts. The reflection on cases enhanced teachers abilities to construct and translate narrative understandings of inquiry into practice. Teachers' practice gradually changed reflect higher levels of inquiry. Teachers' beliefs about inquiry, as represented in their metaphors, changed from teacher-centered to more student-centered in nature; however, they still retained some beliefs about teacher-centered learning which constrained their full implement of inquiry.

The findings of this study suggest that the design of a reflective, inquiry-based professional development model helped teachers make positive changes needed to translate inquiry into their classroom practice. Elements of the model that supported this were integrating teachers' specific professional development needs; process and opportunity for inquiry learning; reflective experience in fostering knowledge of instruction; connecting theory to experience in their context; and team-building and facilitating along with opportunity for extending new ideas.

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