Sasithep Pitiporntapin 2011: Enhancing Thai Elementary Science Teachers' Views and Practices of Zoo-Based Science, Technology, Society, and Environment (STSE) Approach through a Professional Development Program. Doctor of Philosophy (Science Education), Major Field: Science Education, Department of Education. Thesis Advisor:
Assistant Professor Naruemon Yutakom, Ph.D. 286 pages.

This professional development (PD) project was divided into two phases. The aim of the first phase was to explore the views of upper elementary science teachers (Grade 4-6) in teaching about animals based on the STSE approach and using the zoo as a learning resource. The aim of the second phase was to enhance the views and practices of two volunteer teachers regarding the zoo-based STSE approach and to examine the factors that constrained and facilitated their views and practices. In the first phase, the researcher mailed open-ended questionnaires to a 25% random sample from 433 schools under the Bangkok Metropolitan Administration. The response rate was 60%. The data from the questionnaires were analyzed using descriptive statistics and content analysis. The outcomes of the data analysis demonstrated that most teachers emphasized animal content knowledge through the reliance on worksheets and other activities that failed to capture student interest. Further, the teachers did not relate their teaching activities to the community. Moreover, most teachers did not emphasize the linking of information gathered in their field trips to the zoo with their science teaching. For learning assessment, most teachers focused on knowledge more than scientific process skills. Key factors that affected their uses of the zoo as a learning resource included: lack of funds, difficulties with transportation, lack of teachers' awareness, lack of educational information in zoos, school administrators' support, coordinative planning for zoo visit, and parents' support.

In the second phase, the researcher developed the PD program based on data from the first phase and literature review. Throughout the PD program data were collected from group discussions, observations, interviews, and reviewing of documents, and were analyzed using within-case and cross-case analysis methods. The findings showed that these two teachers had developed their views to be more in line with the zoo-based STSE approach. In their practices, they designed their activities to be more concerned with STSE issues and linked to the zoo field trip. They changed their roles from being information providers to being facilitators of students' inquiry. They assessed student learning in all domains with various methods including awareness of the interactions among science, technology, society, and environment and the application of knowledge in daily life. However, there were some indications of their old teaching styles. The factors that affected their views and practices were the teachers' academic backgrounds and experience of teaching, teachers' characteristics, the limits of time, students' learning styles, school administrators' support, students' entrance examinations, and media in the zoo. Further research should focus on identifying the most effective PD strategies for promoting sustainable changes in teachers' views and practices using a STSE approach.

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