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ABSTRACT

This qualitative study, which employed the design research approach, explored the influence of Lesson Study on elementary school science teachers' pedagogical content knowledge (PCK) on the Nature of Science (NOS) relevant to the new science curriculum. PCK on NOS prior to and throughout the Lesson Study Engagement was established from questionnaires, interviews, research lesson, classroom observations and field notes. Before Lesson Study, the teachers possessed acceptable and unacceptable conceptions about the properties of matter, exhibited difficulties in differentiating between observation and inference, and were unfamiliar with NOS. These limited knowledge bases led to inadequate lesson planning and classroom practices. During the Lesson Study engagement, improvements in PCK on NOS were evident based on the research lesson. The teachers demonstrated more acceptable notions on properties of matter and the process skills of observing and inferring. Accordingly, they translated these understandings into an inquiry activity appropriate for the learners. Lesson Study appears to have positive influences on the teachers' PCK on NOS because they implemented its designed features authentically. It is argued that if any of these features were omitted or altered, the observed improvements could have not been as remarkable. These findings imply that PCK on NOS can be acquired in the teachers' own classrooms through carefully planned and meticulously implemented on-site interventions, like Lesson Study. Means to address teachers' inadequacies on the knowledge domains pertinent to PCK on NOS were suggested. Recommendations were forwarded about how properly design Lesson Study will contribute to instructional improvement and enhance student engagement and learning.