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Enhancing Thai In-Service Science Teachers' Technological Pedagogical Content Knowledge Integrating Local Context and Sufficiency Economy into Science Teaching

Authors : Siriwan Chatmaneerungcharoen

Abstract : An emerging body of '21st century skills'-such as adaptability, complex communication skills, technology skills and the ability to solve non-routine problems--are valuable across a wide range of jobs in the national economy. Within the Thai context, a focus on the Philosophy of Sufficiency Economy is integrated into Science Education. Thai science education has advocated infusing 21st century skills and Philosophy of Sufficiency Economy into the school curriculum and several educational levels have launched such efforts. Therefore, developing science teachers to have proper knowledge is the most important factor to success of the goals. The purposes of this study were to develop 40 Cooperative Science teachers' Technological Pedagogical Content Knowledge (TPACK) and to develop Professional Development Model integrated with Co-teaching Model and Coaching System (Co-TPACK). TPACK is essential to career development for teachers. Forty volunteer In-service teachers who were science cooperative teachers participated in this study for 2 years. Data sources throughout the research project consisted of teacher refection, classroom observations, Semi-structure interviews, Situation interview, questionnaires and document analysis. Interpretivist framework was used to analyze the data. Findings indicate that at the beginning, the teachers understood only the meaning of Philosophy of Sufficiency Economy but they did not know how to integrate the Philosophy of Sufficiency Economy into their science classrooms. Mostly, they preferred to use lecture based teaching and experimental teaching styles. While the Co- TPACK was progressing, the teachers had blended their teaching styles and learning evaluation methods. Co-TPACK consists of 3 cycles (Student Teachers' Preparation Cycle, Cooperative Science Teachers Cycle, Collaboration cycle (Co-teaching, Co-planning, and Co-Evaluating and Coaching System)).The Co-TPACK enhances the 40 cooperative science teachers, student teachers and university supervisor to exchange their knowledge and experience on teaching science. There are many channels that they used for communication including online. They have used more Phuket context-integrated lessons, technology-integrated teaching and Learning that can explicit Philosophy of Sufficiency Economy. Their sustained development is shown in their lesson plans and teaching practices.

Keywords : technological pedagogical content knowledge, philosophy of sufficiency economy, professional development, coaching system
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