

The Development of Science Teachers Competency in Active Learning with the
SIPA Model of the School in the Campus Of Chum Phae Man Chomphu,
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Abstract

The research objectives are (1) to develop training activities to improve the secondary in-service science teachers' understanding of Professional Learning Community (PLC) and ability in creating the inquiry-based science lesson plans using Professional Learning Community (PLC), (2) to investigate the ability of the secondary science teachers in developing the inquiry-based science lesson plans using, (3) to investigate the effect of teachers' implementation of the developed inquiry-based science lesson plans using Professional Learning Community(PLC) on Grade 9 students' learning achievement, and (4) to investigate the opinions of the secondary school science teachers toward Professional Learning Community(PLC) Process.

The research collected both quantitative and qualitative data using testing, questionnaire, classroom observation, interviewing, focus group discussion, reflective journal writing, documentary study, field recording, video and voice recording. Qualitative data were analyzed qualitatively by protocol analysis, Content analysis, coding, categorizing, interpreting pattern of meaning, and clustering to give textural description. Quantitative data were analyzed quantitatively. Descriptive statistics was reported in terms of percentage, means, standard deviations, and frequency. Kolmogorov-Smirnov (K-S) was used to test for normality of test scores distribution and responses of the Likert scale questionnaires. Wilcoxon Signed Ranks Test for related samples was used to test for the differences of means between pretest and posttest means scores of the Likert scale questionnaires. T-test for related samples was used to test the differences of means between pretest and posttest means scores and Analysis of Variance for independent samples was used to test for the differences between means of pretest, posttest, and gain scores disaggregated by schools.

Research findings were as follow.

1) Teacher participants improved their understanding of Professional Learning Community(PLC) Process. The results revealed significant differences of

means scores of pretest ($\bar{X} = 3.10$, $SD = 0.50$) and posttest ($\bar{X} = 4.17$, $SD = 0.47$) of the Likert scale questionnaire of all teachers at .05 level using Wilcoxon Signed Rank Test with $Z = -2.22$ ($p = 0.026$). The secondary science teachers gained understanding of Professional Learning Community(PLC) Process through participation in every step of activities in Professional Learning Community(PLC) Process and realized that learning and teaching by using Professional Learning Community(PLC) Process is a form of management techniques to a new learning that emphasis was placed on development and solve teaching problems in the classroom by teachers themselves. They are confident that the teaching using the Professional Learning Community(PLC) as approach to learning and teaching that focuses on student centered learning.

2) Professional Learning Community(PLC) Process contributes to the improvement the capacity of teachers to create science lesson plans based on an inquiry approach and focuses on child development in depth. The lesson plan is to create the best for the students so that the student learning is efficient. The teachers changes his or her role as instructor to be facilitator to guide and stimulate student learning as well as pays attention to the learning of children and to promote and encourage the students to participate in expressing ideas.

3) The mean scores of the secondary school science teachers' levels of satisfaction toward knowledge gained from participation in training workshop on Professional Learning Community(PLC) Process ranged from 4.37–4.75 with a mean score of 4.52 and was rated at the “Highest” level.

Keywords: Science lesson plans, Professional Learning Community(PLC), science teacher, secondary school

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