

**Title** : Learning Inventory Management with the Flipped Classroom  
Method on Safety and Chemistry Laboratory Skill Issue

**Author** : Mr. Theraphong Phuphanna

**Degree** : Master of Education (M.Ed.- Science Education)  
Rajabhat Maha Sarakham University

**Advisors** : Assistant Professor Dr. Panwilai Dokmai  
Assistant Professor Dr. Toansakul Santiboon

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## ABSTRACT

The aims of this research study were 1) to develop the instructional innovative lesson plans with the Flipped Classroom Method (FCM) on Safety and Chemistry Laboratory Skill Issue of secondary students at the 10th grade level through the efficiency of the process and the efficiency of the result ( $E_1/E_2$ ) standardized criteria of 75/75 were determined, 2) to compare between students' learning achievements of their post learning inventory management with the *Flipped Classroom Method* on safety and chemistry laboratory skill issue of secondary students at the 10<sup>th</sup> grade level and the percentage criteria as 75, and 3) to assess students' perceptions of their post learning activities with the FCM on Safety and Chemistry Laboratory Skill Issue of secondary students at the 10<sup>th</sup> grade level. To the administration, which a sample size consisted of 36 students with the Judgmental Sampling technique was selected. Students' responses of their learning outcomes were assessed with the 8-Instructional Innovative Lesson Plans in 12 hours, the 50-item Learning Achievement Test was assessed, and the 20-item Assessing Perception through the Flipped Classroom Model was examined on four scales, namely; Learning Activity Process, Classroom Learning Environment, Learning Media, and Students' Beneficiary scales, each scale composes of five items with the five options of Lickert's scale. Statistically significant was analyzed with the One Sample *t*-test was compared.

The results of this research study have found that: 1) students' responses of their efficiency of the process and the efficiency of the result ( $E_1/E_2$ ) indicates that of 79.67/78.00, which

higher than of the standardized criteria as 75/75, 2) comparisons between students' learning achievements of their post learning inventory management with the Flipped Classroom Method on safety and chemistry laboratory skill issue, the percentage scoring mean as 78.00 of statistically significant at the level of .001, differently. 3) Students' performances of their perceptions to the four scales with the mean scores and standard deviations were assessed, the results indicate that of the strongly agree on four scales; the Learning Activity Process ( $\bar{X} = 4.48$ , S.D. = 1.41), Classroom Learning Environment ( $\bar{X} = 4.48$ , S.D. = 1.45), Learning Media ( $\bar{X} = 4.44$ , S.D. = 1.76) and Students' Beneficiary ( $\bar{X} = 4.39$ , S.D. = 1.61). Overall on students' perceptions indicate that of the strongly agree ( $\bar{X} = 4.45$ , S.D. = 0.92) respectively.

**Keywords:** Flipped Classroom Method, Learning Inventory Management, Learning Achievements, Instructional innovative lesson plan, Assessment, Perception, Chemistry Laboratory Skill, Chemistry Class