

**A COMPARATIVE STUDY ON SELF-EFFICACY FOR  
PERFORMING LEARNING INQUIRY TASKS AND  
ATTITUDES TOWARD LEARNING CHEMISTRY THROUGH  
INQUIRY-BASED LABORATORIES IN GRADES 9-12  
STUDENTS AT CONCORDIAN INTERNATIONAL SCHOOL,  
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**Abstract:** The purpose of conducting this research was to determine students' self-efficacy as well as attitudes toward learning chemistry of middle and high school students before and after learned inquiry-based laboratories. The inquiry-based laboratory offered many benefits to students without difficulties of planning and performing laboratory for science classes. The inquiry-based laboratory process was comprised of developing a hypothesis, designing an experiment, and interpreting data. The attitudes toward learning chemistry were favorable views about laboratory skills, lectures, and real-world applications of the students. The students' self-efficacy and attitudes toward learning chemistry were collected through valid and reliable survey called Student Perceptions in Chemistry Evaluation (SPiCE) created by Winkelmann, Baloga, Marcinkowski, Giannoulis, Anquandah, and Cohen (2014). Pre- and post-evaluations were given to grades 9-12 students (n=48) after finishing the pre-lab session and post-lab session respective. Results indicated no response on students' self-efficacy and attitudes toward learning chemistry. Discussions of what factors might affect the results were presented along with recommendations for teachers and future researchers.

**Keywords:** Self-efficacy, Inquiry-based laboratory, Attitudes toward Chemistry.

### **Introduction**

Science laboratory experiments are based on observing and/or conducting experiments in the laboratory room or in the field. The laboratory experience which includes laboratory activities, people, and materials plays a distinctive role in science curriculum and education. It enables students to vividly understand the theory and concept of science. The purpose of learning through laboratory experiences is to build practical, cognitive, and affective skills. Laboratory experiences directly provide

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