

Research title	Development of Supplemental Physics Lessons for Upper-Secondary-School Level Using Computer-based Experimental Learning of Constructivism
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ABSTRACT

The purposes of this research was to 1)create and to develop the Supplemental Physics lesson for upper secondary school level using computer and experimental based learning of Constructivism with 70/70 educational efficiency 2) create and to develop the computer-based experimental set for upper secondary school physics labs due to Constructivism with ≤ 5 % error compared to the theoretical calculation 3) compare pre to post efficiency scores of the samplings who exposed to the lesson 4) find out the satisfaction of the samplings to the lesson and 5) evaluate the commercial efficiency of the computer-based experimental set. The samplings were M.4, Mathematic- Sciences program students who were studying first semester of 2013 academic year of Triam Udom Suksa School of the South and Princess Chulabhorn's College. Two groups of 45 students were from Triam Udom Suksa School and four groups of 24 were from Princess Chulabhorn's. The total samplings were 186. The research tools are the Supplemental Physics lesson, the teacher's handbook for the lesson, the computer-based experimental set ,the achievement test ,the questionnaire for satisfaction towards the lesson and the evaluation for commercial efficiency of the computer-based experimental set. The finding revealed the Supplemental Physics lesson for upper secondary school level using computer and experimental based learning of Constructivism reached 70/70 educational efficiency. The computer-based experimental set for upper secondary school physics labs due to Constructivism had 0.847784 % error compared to the theoretical calculation. Pre and post efficiency scores of the samplings had 0.01 statistical significance. The satisfaction of the samplings to the lesson indicated at a high level. The commercial efficiency of the computer-based experimental set was marked at a very high level.

Keywords : Supplemental Physics Lessons, Computer Interface
Experiment, Computer-Based Experiments, Constructivism