

**EFFECT OF PROBLEM-BASED LEARNING MODEL USING VIRTUAL
LABORATORY FLASH MEDIA ON STUDENT'S ACHIEVEMENT ON
THE TEACHING OF SOLUBILITY AND SOLUBILITY PRODUCT**

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Abstract

The research was conducted on the second year of SMA Negeri 2 Pematangsiantar, North Sumatera. Effect of Problem-based learning model using virtual laboratory flash media on students' achievement was investigated in order to know the significance difference of students' achievement in experimental class and in control class using a direct instructional model.

Instrument used is multiple choice questions validated as much as 20 questions and questionnaire that spread related to the virtual laboratory flash media. The pretest is done as a preliminary action to know the prior knowledge of students' and also to homogenize the sample. After that, the teaching treatment could be conducted for both experimental class and control class. The last, posttest is given for both classes. Before the hypothesis test was done, the data were tested by normality using Chi Square test and Homogeneity using F test. The result is sample was distributed normally and homogeny.

Result of this study showed positive effects of problem-based learning through virtual laboratory flash media on students' achievement. Where the average of pretest score in experimental class was 36.5 with standard deviation of 6.04 and posttest score 84.3 with standard deviation of 5.65. In the control class, the average of pretest was 37 with standard deviation of 5.35 and the average posttest was 69.3 with standard deviation of 9.26. The hypothesis is tested by using t-test and obtained $t_{\text{count}} > t_{\text{table}}$ ($8.068 > 1.6723$) at level $\alpha = 0.05$ and $df = 58$, so H_a is accepted. It proved that there is significant difference of students achievement taught by problem-based learning compare to direct instructional model which both using virtual laboratory flash media in solubility and solubility product topic. The students achievement taught by problem-based learning model is higher compare to direct instructional model. Increasing of students' achievement was calculated by using normalized gain and the percentage gain in experimental class is 75 % and in control class is 51 %.