

DESIGN OF WORKSHEETS FOR PROBLEM SOLVING- BASIC STRUCTURES WHICH SUPPORT COGNITIVE AND BEHAVIOURAL PROCESSES

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An interactive teaching method becomes important in order to engage students thinking during an introductory physics class. The worksheet is an effective tool that helps promote this teaching method. The tool was trialed in Thailand, specifically for free-body diagram, in a lecture class with 293 first-year science students. The preliminary result showed that the diagram effectively enhanced students learning physics problem solving (Roberts, Sharma, Sefton, & Khachan, 2008). We then improved the worksheet and used at the University of Sydney. Moreover, the topics that is taught by using worksheets was extended to Thermodynamics and Waves. The worksheets were given in both the lecture and tutorial classes. The sample groups were 519 students of Fundamental, Regular, and Advanced classes. The structure of the worksheet was designed into three columns to engage student discussion during the classes including clarifying a situation, identifying variables, and drawing a diagram. The results showed that the worksheet affected student behaviors in the classes. The efficiency of this work is shown by using the SOLO taxonomy, referring the levels of student's understanding. We will discuss the effectiveness of the worksheet in this work.

REFERENCE

Roberts, A. L., Sharma, M., Sefton, I. M., & Khachan, J. (2008). Differences in two evaluations of answers to a conceptual physics question: A preliminary analysis. *International Journal of Innovation in Science and Mathematics Education (formerly CAL-laborate International)*, 16(1), 28-38.

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