

## Enhancement of learning through problem-based learning

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This study reports how problem-based learning (PBL) affects students' knowledge and understanding about new scientific concepts. To investigate the extent, two teaching methods, PBL and Traditional Learning Method (TLM) were put into practice. The topic photosynthesis from advanced level biology curriculum was chosen because there were new scientific concepts to be understood by the students. Four classes of twelfth graders in biological science in two schools were selected for the study. A pre-test was administered to identify the prior knowledge of students. Mean marks for pre-test showed that all the students in selected classes were at equal level.

Two biology teachers in selected schools taught TLM groups and PBL groups were conducted by the researcher. A unit plan and the lesson plans for PBL were developed. TLM students were taught the concepts in the topic photosynthesis in a more conventional way, while PBL students used an active, co-operative learning environment. Assessments were accomplished after each lesson for PBL and TLM groups. At the end a post-test was given to all the students in PBL and TLM groups. Mean marks for assessments and post-test disclose the significant difference between PBL and TLM groups. Two sample t-test results also showed the significant difference in understanding new concepts by PBL and TLM students.

The introduction of PBL into classroom situation resulted significant changes to the way in which teaching and learning were viewed. PBL environment nurtured deep learning rather than surface learning in conventional programmes, by engaging students in groupwork. It helped students to move from self-awareness to self-acceptance and to self-esteem. Therefore, PBL is one of the approaches to increase students' participation in learning environment and should be adopted by teachers at all levels to device students for self-regulated learning.