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## BUILDING CHEMISTRY CONCEPTS BY EIGHTH GRADERS THROUGH PROBLEM BASED LEARNING

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Many students think chemistry has no relationship with their lives and consider it difficult to build up chemistry concepts. Therefore, educators have been thinking of innovative teaching learning strategies for learning chemistry concepts in an interesting manner. Problem-Based Learning (PBL) is an effective instructional strategy to address the above problem. Therefore, this study was aimed to investigate the effectiveness of learning chemistry concepts in 8<sup>th</sup> grade curriculum to the unit on, “*Matter, atom, molecule, element and compound*” through PBL.

The present study was conducted in two schools, one in Kandy and the other in the Kurunegala district considering the convenience of the researcher. Two parallel science classes were selected from each school. Fifteen lessons were developed as ill-structured problems for PBL classes and discussed in detail with the two science teachers about the way of presenting these lessons to the students. One group of students was taught using PBL and the other group in the traditional way by the same teacher in 15, forty-minute periods in each school. The teachers completed the unit in three weeks. Data were collected through participant observation, videotaping lessons, interviews, a diagnostic test and an achievement test. Data collected from multiple sources were analyzed by triangulating data. Two sample *t*-tests were also used for quantitative analyses.

The study revealed that there was active participation of students in PBL classes in solving problems together in groups. This shared learning experience enabled them to develop an interest in chemistry learning and to develop communication skills, presentation skills, critical thinking and reasoning ability which promoted learning chemistry concepts. They were able to make a shift from note-taking to note-making for better understanding. The two teachers were able to see unseen behaviour of students and to hear unheard voices of students leading them to rethink their previous instructional methodologies. They had enough room to identify student difficulties and wanted to extend this experience in developing future lessons. In non-PBL classes students did not play an active role and totally depended on the teacher's teaching. Two sample *t*-tests also revealed that there was a significant difference in achievement scores of the PBL groups compared to non-PBL groups. Problem-based learning approach enhanced students understanding of learning chemistry concepts and is more effective in learning chemistry concepts at junior secondary level in Sri Lanka.