# UNIVERSITI TEKNOLOGI MARA

# C++ PROGRAMMING COURSEWARE USING PROBLEM-BASED LEARNING (PBL) APPROACH

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# ABSTRACT

First year students on Information Technology courses at tertiary level find C++ Programming difficult: learning outcomes are poor with high failure rates and low learner retention. A number of research studies have shown that novice programmers have low motivation and low programming self-efficacy. The literature suggests that Problem-based Learning (PBL) can improve the teaching of difficult concepts and it has been promoted by professional as a teaching strategy that can improve learning outcomes and bring about positive changes in learning behavior. The main aim of this research study is how to improve teaching and learning programming after implementing learning courseware that use Problem-based Learning (PBL) approach. The objective of this study is to design a learning application to teach programming using PBL approach, develop learning courseware that can help students to learn programming and to identify the students' learning preference between the ordinary classroom learning and the PBL. The prototype has been tested with six IT students who have experienced learning programming. Analysis of the results showed that PBL courseware has succeeded in assisting students in learning C++ Programming. Thus, the PBL approached can be implemented in teaching and learning of programming.

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