



**A STUDY ON THE SIGNIFICANCE OF STUDENTS'
THINKING LEVEL TO STUDENTS' PERFORMANCE**

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ABSTRACT

Students' level of thinking can be measured in terms of their problem solving, logical thinking and cognitive skills. The aim of this research is to prove the hypotheses, that the students' level of thinking is not a significant factor for students to achieve good result in C programming course. This course is a core subject offered to engineering foundation students in Centre of Foundation Studies (CFS), Universiti Teknologi MARA (UiTM). In Malaysian education system, students have been exposed to these three skills during their secondary school in Mathematics subject. Students are expected to possess problem solving, logical thinking and cognitive skills in order to acquire programming skill. In this research, we measure the students' thinking level as the independent variable. This is achieved by distributing a set of questionnaire to 170 respondents out of 700 students. The questionnaires were evaluated by using rubrics table and the score was based on Likert Scale. Students' score for the course, which includes the course work and final examination marks, were named as dependant variable. SPSS is used to explore the impact of students' thinking level as a significant factor to C programming course. In this case study, it is found that the students' thinking level is not a significant factor to the students' score in this course.

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1. Problem Background

C programming is taught to engineering foundation students, UiTM Puncak Alam in second semester. Teaching and learning process are implemented via mass lecture and laboratory session. Many approaches were carried out to teach students on C programming such as lectures, collaborative, problem solving as well as drill and practice. During mass lecture, students are taught theories and the conceptual of the subject matter. In lab session, students learned the subject by doing hands-on activities. In addition, mini-lectures were conducted during lab session before starting their lab exercises. The reason was to review the key points of the topic for the day to ensure the students understand the subject matter.

Observations by lecturers towards the students were carried out for the whole semester of their studies and it was found that students were difficult to understand the programming concept and therefore they were unable to solve tasks given during lab session. The students took more than the time provided to complete a simple programming task with inaccurate answers. This is supported by a research that investigated the nature of the academic problem faced by novice programming students. It reported that students feel difficult in understanding and implementing both low level-programming concepts, such as syntax and variables, as well as high-level concepts, such as OOP principles and efficient program design (Butler & Morgan,