
Enhancing Student Understanding in Data Communication and Networking Course: Hands-On Learning with Cisco Packet Tracer

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Abstract

As communication technology advances, Polytechnic Malaysia has been offering a course of Data Communication and Networking to produce competent graduates to meet the high demand for computer network experts. The purpose of this research is to study the enhancing student understanding in this course using hands-on learning and with Cisco Packet Tracer. There are two different methods currently being applied in the practical session of the course. The first method is using Cisco Packet Tracer software, and the second method is to use the real network equipment as hands-on learning. However, there is ambiguity as to which method is more effective for student understanding. Therefore, this research is carried out to determine the best practical method to be applied to enhance the understanding of the students. This quantitative research is carried out through a survey by using a questionnaire which is distributed to a sample of 37 students in their fifth semester of the Diploma in Electronic Engineering (Communication) program for the 2022/2023 session after the students have completed the final practical work activity. The data was collected using survey forms and analysed using Statistical Package for the Social Sciences (SPSS) version 29.0. The analysis result showed that the level of understanding of students during practical work using Cisco Packet Tracer has obtained a mean score of 4.58. Meanwhile, the method of using real equipment as a hands-on learning has obtained a mean score of 4.51. Therefore, based on this result, it is concluded that there was no significant difference between the level of skill of students when using these two methods. Students understand more easily by using Cisco Packet Tracer software compared to use a real network equipment. It is hoped that the results of this study can be a guide for lecturers to assess the suitability of methods that need to be used to improve students' understanding during practical work.

Keywords: *Hands-on learning, Cisco packet tracer software, Networking*
