
Improving Microprocessor Fundamentals Education: A Case Study from Electrical Engineering Students at Polytechnic Sultan Idris Shah

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Abstract

This research explores the difficulties faced by Electrical Engineering Department students at Polytechnic Sultan Idris Shah (PSIS) in learning Microprocessor Fundamentals. Microprocessors are vital in modern engineering, forming the backbone of many devices and systems. However, students often struggle to understand the theory and link it to practical applications. This issue is caused by several factors, including teaching methods, lack of resources, and different learning styles. The study used surveys to collect responses from 65 students enrolled in the Diploma in Electronic Engineering (Computer) also known as DTK program. The surveys focused on theoretical understanding, practical skills, and the effectiveness of teaching methods. The survey measured students' understanding, practical skills, and the effectiveness of teaching methods and resources. Descriptive statistics were used to analyse the data. Results showed that 41.5% of students find it hard to grasp key concepts, and 38.5% feel the lack of visual aids makes learning more difficult. Additionally, 33.8% reported a mismatch between practical labs and theoretical lessons. To address these challenges, the research suggests several solutions. Using simulation tools can help students visualize how microprocessors work. Providing more detailed and complete teaching materials can also make it easier for students to understand complex topics. Aligning practical exercises with lecture content is another recommendation to ensure students can apply what they learn. Finally, introducing guest speakers and industry visits can give students real-world insights and make learning more engaging. The study recommends integrating simulation tools, enhancing teaching materials, and increasing industry exposure to bridge these gaps and improve educational outcomes. The findings of this study aim to improve the quality of teaching Microprocessor Fundamentals and prepare students better for their future careers. By implementing these recommendations, educators can bridge the gap between theory and practice, ensuring students gain the skills and knowledge they need to succeed in the field of electrical engineering.

Keywords: Microprocessor Fundamentals, Engineering Education, Learning Challenges, Teaching Strategies, Polytechnic Sultan Idris Shah
