Thesis Title	The Effectiveness and Learning Achievement PSpice for Windows Experimental Instruction
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Abstract

The purpose of this research was to study the effectiveness in applying a PSpice soft ware program with laboratory instruction of electrical circuit. Since PSpice could simulate electrical phenomena of circuit understudied and display them on computer screen, the researcher believed that characteristic would enable students to conceptualize a wider scope of electrical phenomena and thus enable them to gain higher level of knowledge application. Instruments used in this study included a set of Laboratory work incorporated with PSpice soft-ware program and a set of test items measuring various level of students' abilities. It was expected that the laboratory developed would have efficiency over 80/80.

Four area of content were selected for the study. They were power of alternating current, Resonant circuit, Transient responses and Fourier series. Contents were collected from many texts, analyzed them into clear learning structure and reorganized them in to 8 conventional experimental format. Seventy multiple–choice test-items covering knowledge levels of understanding, application and analysis were developed. The test possessed following characteristics: 0.6 to 0.1 discrimination index, reliability of 0.34 , 0.38 and 0.85 respectively.

Twenty electrical students from Rajamargala Institute of Technology Chiangrai Campus were used as a sample of the study. They were taught initially with a principle of PSpice to eliminate a hidden variable due to a lacking of skill in using the software. Secondly, a set of prior basic knowledge to the content under studied was tested. Thirdly, students were allowed to carry out the experimental work from the laboratories sheets developed and were formulative tested after each learning session. Finally, students' learning achievement were measured by post-test at the end of the experimental sessions. Students' behaviors, however, were randomly observed and recorded during their work performing.

The study found a significant difference at the level of 0.01 which could be concluded that the PSpice laboratory improved students' learning achievement. Average score from formative tested was 91.78 % and post-test was 85.78%. The effectiveness of Laboratory developed was 91.78/85.78 which was higher than the set criteria. The observation also indicated that the laboratory sheet developed facilitated 91.54% of students in self-learning and self-working. The PSpice Laboratory and its experimental process, therefore, can be well implemented to the area of Network Circuit Analysis.