

Seven Principles of Instructional Content Design for a Remote Laboratory: A Case Study on ERRL

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Abstract

This paper discusses the results of a study of the requirements for developing a remote radio frequency (RF) laboratory for electrical engineering students. It investigates students' preferred usage of the technical content of a state-of-the-art RF laboratory. The results of this study are compared to previous findings, which dealt with other user groups (technicians in technical colleges and engineers in the RF domain). Based on the results of these analyses, seven essential principles for designing and developing such a laboratory were identified. As a case study, these principles were then implemented into a remote laboratory system. In this paper, the implementation examples are also provided and discussed. The primary aim of this study is to guide remote laboratory platform developers toward the most effective instructional design. This study also determined, from the remote laboratory system case study, what the requirements are of such a laboratory from the students' perspective.