

Remote Laboratory: application and usability

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Abstract—The practice and the hands-on are essential for technical and professionals skills, even in controlled situations. Due to that, the use of laboratories during the learning process is fundamental, although it has been more difficult to support such kind of infrastructure locally, which brings the challenge to find alternatives. This work presents the alternatives for the use of remote laboratories, showing that this idea can be spread and applied in different technical areas allowing students and professors to accomplish experiments in a safe and flexible environment trough the internet in real remote laboratories.

Index Terms—Remote Laboratory, Remote Learning, Blended Learning, E-learning.

I. INTRODUCTION

This paper brings a discussion about the significance of the physical experiments for the students from technical areas. It is well-known that the practical/theoretical learning is fundamental for the student of technological courses due to the occurrence of many phenomena in reality that may not be observed in theoretical models. For most of the courses, this issues are solved by the use of dialogue lectures and practical experiments in laboratory. This kind of question has brought practical/theoretical barriers, and also brought barriers created for the professors that looks to E-learning initiative as unworkable. A Remote Laboratory is a physical module that combines a server to communicate with the client through the internet on a web service and dedicated circuit boards for the experiments, where the electronic components and instruments are connected.

II. THE USE OF REMOTE LABS IN IFSC

In 2014, a group of professors from Federal Institute of Education, Science and Technology of Santa Catarina – Brazil (IFSC), accomplished two experiments with a group of fifteen students. The activity was well executed and after that, professors and students discussed the pros and cons of the tool. After that, it was applied a questionnaire with nine professors from DAELN that were willing to collaborate with the project, aiming to determine the subjects that the remote laboratories can be used.

III. RESULTS AND DISCUSSIONS

Considering the results from the survey with the staff of DAELN, it is possible to verify the interest of the professors about the use of remote laboratories. Furthermore, this paper presents an analysis that shows the potential and, primarily, the feasibility of applying the remote laboratories technology, more specifically, in the courses of the Electronics Academic Department of IFSC.

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