

# Virtual Classrooms for the Development of Practical Laboratories in a Colombian Higher Education Institution

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## **keywords**

Higher education institutions; Technologies towards teaching; Virtual laboratories

## **Abstract**

This research was developed with the aim of determining the effect of conducting virtual laboratories with respect to the subjective evaluation of professors and the standardized tests of a Colombian higher education institution. To achieve this objective, an explanatory descriptive study with a quasi-experimental, field, and longitudinal design was proposed to execute a comparative analysis between the conduct of face-to-face and virtual laboratories in the selected higher education institution. The research was developed between the periods 2019–1 and 2020–1, being the first period when face-to-face laboratories were taught, meanwhile the second period when the students were assisting classes through virtual platforms. The results of the research process indicate that there is a dependency between grades corresponding to 10% and 20% in each of the three periods for the 2019–1 semester and the 2020–1 semester, and it is evidenced that the number of students in the insufficient category in the 20% test decreased. Another representative finding is that the scores of professors' subjective evaluations are consistent with the results within the standardized tests of the university under study. It is then concluded that the implementation of various virtual spaces for teaching allows knowledge development process to be better, where the opportunity is provided to a large number of resources or processes that could be expensive for universities in low-income countries. Similarly, virtual classrooms open the opportunity for more students, especially the ones from the most remote locations to be able to participate in the classes.