Integration of Virtual Lab to Enhance the Quality of Laboratory Experiments in E-Learning Domain

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Abstract

This paper seeks to propose the incorporation of Virtual Labs into e-learning settings environments to improve the quality and deliver of laboratory-based education. Virtual labs use 3D models, AR and interactive tools and provide students with an opportunity to conduct experiments on the Internet as most of the difficulties, connected with the absence of the main reagents or time restrictions, or security issues in real-life labs can

be avoided. Analyzing their effectiveness based on students' activity, achievement and possibility of expanding, the use of digital labs in the context of the future development of science and engineering will help investigate the potential of virtual labs. The results show that virtual labs are an effective and a more cost-effective means to enhance laboratory learning in the times of the Summer Oaks. The prospects for e-learning are staggering especially where virtual labs will provide opportunities to conduct experiments when resources are limited. According to the research done in the present study, the incorporation of virtual labs in e-learning environment can aid in the improvement of the quality of STEM instructional provision, especially concerning the practical rendition of theoretical concepts.

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