

Effects of in silico (Virtual Lab) And in vitro (inside the Classroom) Labs in the Academic Performance of Senior High School Students in General Biology

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Abstract : The Fourth Industrial Revolution (FIR) is a major industrial era characterized by the fusion of technologies that is blurring the lines between the physical, digital, and biological spheres. Since this era teaches us how to thrive in the fast-paced developing world, it is important to be able to adapt. With this, there is a need to make learning and teaching in the bioscience laboratory more challenging and engaging. The goal of the research is to find out if using in silico and in vitro laboratory activities compared to the conventional conduct laboratory activities would have positive impacts on the academic performance of the learners. The potential contribution of the research is that it would improve the teachers' methods in delivering the content to the students when it comes to topics that need laboratory activities. This study will develop a method by which teachers can provide learning materials to the students. A one-tailed t-Test for independent samples was used to determine the significant difference in the pre- and post-test scores of students. The tests of hypotheses were done at a 0.05 level of significance. Based on the results of the study, the gain scores of the experimental group are greater than the gain scores of the control group. This implies that using in silico and in vitro labs for the experimental group is more effective than the conventional method of doing laboratory activities.

Keywords : academic performance, general biology, in silico laboratory, in vivo laboratory, virtual laboratory

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