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Learning Instructional Managements between the Problem-Based Learning and Stem Education Methods for Enhancing Students Learning Achievements and their Science Attitudes toward Physics the 12th Grade Level

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Abstract : Strategies of the STEM education was aimed to prepare of an interdisciplinary and applied approach for the instructional of science, technology, engineering, and mathematics in an integrated students for enhancing engagement of their science skills to the Problem-Based Learning (PBL) method in Borabu School with a sample consists of 80 students in 2 classes at the 12th grade level of their learning achievements on electromagnetic issue. Research administrations were to separate on two different instructional model groups, the 40-experimental group was designed with the STEM instructional experimenting preparation and induction in a 40-student class and the controlling group using the PBL was designed to students identify what they already know, what they need to know, and how and where to access new information that may lead to the resolution of the problem in other class. The learning environment perceptions were obtained using the 35-item Physics Laboratory Environment Inventory (PLEI). Students' creating attitude skills' sustainable development toward physics were assessed with the Test Of Physics-Related Attitude (TOPRA) The term scaling was applied to the attempts to measure the attitude objectively with the TOPRA was used to assess students' perceptions of their science attitude toward physics. Comparisons between pretest and posttest techniques were assessed students' learning achievements on each their outcomes from each instructional model, differently. The results of these findings revealed that the efficiency of the PLB and the STEM based on criteria indicate that are higher than the standard level of the 80/80. Statistically, significant of students' learning achievements to their later outcomes on the controlling and experimental physics class groups with the PLB and the STEM instructional designs were differentiated between groups at the .05 level, evidently. Comparisons between the averages mean scores of students' responses to their instructional activities in the STEM education method are higher than the average mean scores of the PLB model. Associations between students' perceptions of their physics classes to their attitudes toward physics, the predictive efficiency R2 values indicate that 77%, and 83% of the variances in students' attitudes for the PLEI and the TOPRA in physics environment classes were attributable to their perceptions of their physics PLB and the STEM instructional design classes, consequently. An important of these findings was contributed to student understanding of scientific concepts, attitudes, and skills as evidence with STEM instructional ought to higher responding than PBL educational teaching. Statistically significant between students' learning achievements were differentiated of pre and post assessments which overall on two instructional models.

Keywords : learning instructional managements, problem-based learning, STEM education, method, enhancement, students learning achievements, science attitude, physics classes
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