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Impact of Using Peer Instruction and PhET Simulations on the Motivation and Physics Anxiety

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Abstract : This research focused on the impact of Peer Instruction and PhET Simulations on the level of motivation and Physics anxiety of Grade 9 students. Two groups of students were used in the study. The experimental group involved 65 registered students while the control group has 64 registered students. To determine the level of motivation of students in learning physics, the Physics Motivation Questionnaire was administered. On the other hand, to determine the level of Physics anxiety of the students in each group, Physics Anxiety Rating Scale was used. Peer Instruction supplemented with PhET simulations was implemented in the experimental group while the traditional lecture method was used in the control group. Both instruments were again administered after the implementation of the two different teaching approaches. “Wilcoxon Signed Rank test” was used to test the significant difference between pretest and posttest of each group. “Mann Whitney U” was used to test if significant differences exist between each group before and after instruction. Results showed that there is no significant difference between the level of motivation and anxiety of the experimental and control group before the implementation at $p<0.05$ significance level. It implies that the students have the same level of motivation and physics anxiety before instruction. However, the results of both tests have significant differences between the groups after instruction. It is also found that there is a significant positive change in the responses of the students in the experimental group while no change was evident on the control. The result of the analysis of the Mann Whitney U shows that the change in the attributes of the students is caused by the treatment. Therefore, it is concluded that Peer Instruction and PhET simulation helped in alleviating motivation of students and minimizing their anxiety towards Physics.

Keywords : anxiety, motivation, peer instruction, PhET simulations
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