World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:12, No:07, 2018

Interactive Lecture Demonstration and Inquiry-Based Instruction in Addressing Students' Misconceptions in Electric Circuits

Authors : Mark Anthony Casimiro, Ivan Culaba, Cornelia Soto

Abstract : Misconceptions are the wrong concepts understood by the students which may come up based on what they experience and observe around their environment. This seemed to hinder students' learning. In this study, six different misconceptions were determined by the researcher from the previous researches. Teachers play a vital role in the classroom. The use of appropriate strategies can contribute a lot in the success of teaching and learning Physics. The current study aimed to compare two strategies- Interactive Lecture Demonstration (ILD) and Inquiry-Based Instruction (IBI) in addressing students' misconceptions in electric circuits. These two strategies are both interactive learning activities and student-centered. In ILD, the teacher demonstrates the activity and the students have their predictions while in IBI, students perform the experiments. The study used the mixed method in which quantitative and qualitative researches were combined. The main data of this study were the test scores of the students from the pretest and posttest. Likewise, an interview with the teacher, observer and students was done before, during and after the execution of the activities. Determining and Interpreting Resistive Electric Circuits Test version 2 (DIRECT v.2) was the instrument used in the study. Two sections of Grade 9 students from Kalumpang National High School were the respondents of the study. The two strategies were executed to each section; one class was assigned as the ILD group and the other class was the IBI group. The Physics teacher of the said school was the one who taught and executed the activities. The researcher taught the teacher the steps in doing the two strategies. The Department of Education level of proficiency in the Philippines was adopted in scoring and interpretation. The students' level of proficiency was used in assessing students' knowledge on electric circuits. The pretest result of the two groups had a p-value of 0.493 which was greater than the level of significance 0.05 ($p > 0.05$) and it implied that the students' level of understanding in the topic was the same before the execution of the strategies. The posttest results showed that the p-value (0.228) obtained was greater than the level of significance which is 0.05 ($p > 0.05$). This implied that the students from the ILD and IBI groups had the same level of understanding after the execution of the two strategies. This could be inferred that either of the two strategies- Interactive Lecture Demonstration and Inquiry-Based Instruction could be used in addressing students' misconception in electric circuit as both had similar effect on the students' level of understanding in the topic. The result of this study may greatly help teachers, administration, school heads think of appropriate strategies that can address misconceptions depending on the availability of their materials of their school.

Keywords : inquiry- based instruction, interactive lecture demonstration, misconceptions, mixed method
Conference Title : ICTMATT 2018 : International Conference on Teaching Methodologies, Approaches and Teacher Training
Conference Location : Paris, France
Conference Dates : July 19-20, 2018