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An evaluation of student's understanding of DC circuit concepts through students' written explanations

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One of the topics that is regarded as challenging to learn for conceptual understanding by students from secondary to tertiary levels is simple electric circuits. The topic is said to be challenging to learn for qualitative understanding due to the presence of misconceptions brought by or derived from every day prior experiences about the topic. In literature, the word "misconception" is mostly interchanged with alternative conceptions, naïve conceptions etc. The results of various studies from different countries showed that students have the same pattern of learning difficulties in understanding electric circuits and ultimately pass their grade with vague or inconsistent understanding of the topic.The use of multiple-choice concepts tests is common in probing students' understanding of physics concepts but less has been done in probing students' understanding of the concepts by using students' responses to explanation-type questions. However, the study that dealt with the analysis of explanation-type question to physics grade 12 examination scripts concluded that the analysis of the explanations written by students in exams "does offer researchers and teachers a reliable and efficient way by which written student explanations can be probed for conceptions". Departing from the norm of using multiple-choice concept tests to probe students' understanding of some concepts in DC circuits the current study used the scientific explanations to achieve the following two aims:
(a) To explore pre-service students' understanding basic DC concepts through their responses to written explanations.
(b) The impact of using the explanation-type questions on diagnosing students' misconceptions of DC circuits prior to formal instruction.

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No

Level for award
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N/A

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