Online Assessment: A Catalytic Mechanism for Teachers to Gain Insight into Students' Prior Knowledge, and Scaffold Learning

Shalini Dukhan[1]

University of the Witwatersrand, Johannesburg, South Africa[1]

Abstract

Hattie and Timperley's 'Visible Teaching and Learning Theory' describes feedback as key to student learning. For effective teaching to take place it is imperative for the teacher to gain insight into the students' relevant foundational knowledge. This study examines how feedback from online tests can enable teachers to quickly determine the relevant prior knowledge of first-years and thus enable lecturers to customize their lectures. 292 first-year medical students participated in three prior knowledge tests on Cell Biology, DNA and RNA replication respectively.The online tests were structured in the form of multiple-choice questions.The students' depth of understanding and misconceptions emerged from analysis of the responses to the tests.The results of the prior knowledge tests were used to customise the lectures that followed. At the end of the six-week lecture series students answered a questionnaire on their perception of the effectiveness of these tests and lecture-feedback sessions to their learning. Quantitative analysis of the questionnaire reflected that the students perceived that the tests made them think more deeply about the material (70%, $p<0.001$), helped them prepare better for the lectures (71%, $p<0.001$), and form an in-depth understanding of the course content (62%, $p<0.001$). A comparison of semester grades across three years significantly ($p<0.001$) indicated improved performance in 2018. The feedback strategy offered by the use of online assessments to test prior knowledge is effective in critically indicating to teachers the extent and depth of prior knowledge that students have in relation to the material to be taught.

Keywords: *online tests, feedback, student learning, teaching approach, teaching practice, meaningful engagement.*