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Modelling instruction in ECP

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This paper describes the practice used in an Extended Curriculum Program (ECP), on DC circuits. ECP is a program to support the first-year university students, who qualified for the entry but did not perform well in the grade 12 national examination, from under-performing rural community schools in South Africa. In order to improve the performance of these students, the traditional pedagogy replaced with the Modelling Instructions (Hestenes, 1987).
Modelling instruction (MI) focuses on student centered learning and the teacher acts as a facilitator. Students are trained as scientists; they construct, validate and apply scientific models in a specific context. Students learn to predict, design experiments and use models in different situations. Throughout the modelling instruction the teacher has a definite agenda and specific objectives for every class activity: concepts and terminology to be introduced, conclusions to be reached and misconceptions to be addressed. The teacher uses Socratic questions and plays the role of a physics coach rather than a traditional teacher. To the students, the skilled teacher is transparent, appearing primarily as a facilitator of student goals and agendas. This talk presents the pedagogy used in the ECP curriculum and the effects of attitude of students towards the new approach.
The Aspects of Circuit Questionnaire (ACQ) (John & Allie, 2017) is used to measure the effectiveness of the project and compared with the traditional group.

Hestenes, D. (1987). Toward a modeling theory of physics instruction. American Journal of Physics, 55(May), 440–454.
John, I., & Allie, S. (2017). DC circuits: I . Evidence for fine grained contextual dependence. European Journal of Physics, 38(38).

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