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A critical assessment of first year entering university science students' conceptual understanding

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**Abstract content
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Meaningful conceptual understanding is a key requirement for the acquisition of applied knowledge for the navigation of sophisticated studies in science and engineering. It is a known fact that the academic migration of students from the school sector to institutions of higher learning is essentially accompanied by the existence of conceptual knowledge gaps in various content domains. In response to this predicament and as a critical component of the First-Time Entering Students' Orientation Programme, a diagnostic questionnaire was administered among first year science and engineering students at the University of Johannesburg prior to the commencement of the academic programme in order to establish the nature and extent, if any, of their conceptual knowledge gaps. In terms of its design, the diagnostic questionnaire encapsulated items based on various conceptual knowledge areas pertaining to Grade 10, 11 and 12 Physical Science learning domain. Analysis of students' responses exhibited the existence of conceptual knowledge gaps which may impede meaningful learning.

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