



Soils resource. The term ‘scaffolding’ is increasingly used to describe certain kinds of support which learners receive in their interaction with experts, teachers and mentors as they develop new skills, concepts or levels of understanding. The mechanisms for assisting learner cognition from an actual to the potential developmental level of the learner have been extended greatly by technology applications and contemporary research (McLoughlin and Oliver, 1998). Originally, the teacher’s role was conceived as providing scaffolded assistance through modelling, contingency management, cognitive structuring and feedback. Through modelling, tasks, skills and concepts can be demonstrated while retaining complexity and authenticity, so that learners can become engaged in the acquisition of new skills. Contingency management is concerned with recognising and rewarding learner actions, while feedback enables students to compare themselves to others. With practice, these mechanisms are internalised and become metacognitive strategies for students to regulate their own learning.

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Flexible learning – helping first year students make the most of an interactive software package

David Mills, Charles Don and Susan Feteris, School of Physics and Materials Engineering,
Monash University
David.Mills@spme.monash.edu.au

Physics Concepts and Simulations is a 34 module package for first year science and engineering students which spans introductory physics concepts (Part A) and many standard tertiary level topics in Part B (Mechanics, Waves, Oscillations) and Part C (Electricity, Magnetism, Modern Physics). Its key feature is the level of student interactivity in animated examples, self-review items and virtual experiments using detailed simulations. How it is to be used by students and how it fits with laboratory, lectures, and assessment was a challenge when designing it. When used as an optional resource, most good students used it extensively and found it valuable. The current approach requires all students to do two minor assignments, each on selected aspects of two or three modules, with an emphasis on deeper learning. This has led to a marked improvement in student approaches to learning.