



## Moving towards constructive alignment in first year biology

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**Abstract:** A change in the assessment scheme of a first semester First year Biology unit in 2007 was made to improve student performance and perceptions. Pass rate of the unit increased by nearly a third in 2007, primarily due to a relatively better performance on the multiple choice section of the theory exam which was not part of the change. The student perception of the assessment scheme did not improve and it was clear that the assessment tasks continued to encourage memorisation of isolated facts rather than assessing higher-order levels of understanding. A critical review of the unit revealed little alignment between the assessment and the learning objectives. The challenge is to develop overall learning objectives for the unit, develop criteria to assess levels of understanding in this unit, align the assessment with the objectives and finally restructure the content of lectures and practical classes to match the objectives. This talk will discuss how we are moving towards constructive alignment in this first year biology unit.

## Educating first-year students about the benefits of conservation partnerships: an experiential approach

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**Abstract:** Loss of biodiversity and habitats is one of the greatest threats to the Australian environment and education has a critical role to play in addressing this issue. Conservation of Australia's environment occurs as a partnership of government agencies, private enterprise, scientists, educators, and the community. As future leaders of conservation activities it is essential for students to gain an understanding of the application of this partnership model. This presentation describes practical work undertaken by first year students studying in the Bachelor of Science at the University of Newcastle that has been designed to mimic a real-world conservation project. The project involves students in a partnership with government and the community to rehabilitate a local nature reserve where several endangered species are threatened by weed invasion. Students research the problem (weed invasion), quantitatively assess the impacts of weed invasion and a management intervention (community-based bush regeneration), and work alongside a community-based bushcare group and government agency during on-ground rehabilitation of the reserve. Surveys of students (via a reflective diary) have found that key outcomes have been the acquired knowledge and skills that are relevant to a critical issue for the Australian environment; a more optimistic attitude towards environmental issues and their potential to develop solutions; a positive perspective about the role of community involvement in conservation of Australia's environment; continued participation in community bushcare groups outside the classroom; and personal involvement in solving a critical conservation issue. The students' work has provided long-term monitoring of the effectiveness of the conservation activities since 2003, a task that is beyond the technical capabilities of most community volunteer groups and the financial constraints of government agencies.

## Authentic-based learning: linking theory to real-life experience by instructional design to promote effective learning

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**Abstract:** First year students face an array of challenges in their transition to tertiary education, not the least being large classes and multi-disciplinary curricula that prescribe a broad rather than a deep specificity of content. If students lack the ability to interpret study requirements and are not encouraged to play an active role in their learning processes, they may be overwhelmed, especially if prior knowledge of the discipline is limited or non-existent. At the University of Queensland, most first level biology classes average 800 students from diverse academic and socio-cultural backgrounds, of which 30 – 50% have had no previous contact with the discipline. In response, there have been increased efforts to adapt pedagogical design to respond to the diverse learning needs of this large cohort of students. In an attempt to address these needs, and to establish an environment to promote discipline-specific learning communities, peer assisted study sessions (PASS) have been incorporated within the majority of first level biology courses.



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*From a theoretical viewpoint, the conversion of information to knowledge in PASS conforms to a social constructivist approach, where optimal development of understanding is facilitated via a socially interactive interchange of ideas with near-peer leaders. Within this student-directed learning environment, leaders are able to identify learners' knowledge deficits and consequently design instructional tasks to address any conceptually problematic issues. In the translation of theory to pedagogy, if learning comes from a 'doing' experience that fits in the framework of existing knowledge and experience, are some instructional designs more effective than others in promoting deep approaches to learning within this environment?*

*This presentation describes an attempt to identify and evaluate the efficacy of authentically based instructional designs to promote deep learning approaches viz. where students can adopt an active, experiential mode of learning, where students are able to see the relevance of what they are learning, and where information is processed in context and connected to existing knowledge.*