



#### **Re-creating an introductory physiology unit in the Core Concepts form.**

Sarah J Etherington, Natalie Callan, Shu Hui Koh, Tamara Hourani and Marnie Nolton

*Murdoch University, Perth, Western Australia.*

Students in an introductory vertebrate physiology unit (BMS107) at Murdoch University have diverse career aspirations (clinical/non-clinical, animal/human) and wide ranging ATARs (70->95). This diversity has historically produced challenges in engaging, and creating valuable learning for, each student. Here we showcase the redesign of BMS107 to promote student mastery of six Core Concepts of Physiology (Michael et al., 2017), with the intention that these “big ideas” would engage diverse students and provoke higher-level learning of relevance to students pursuing divergent career paths. Concepts were selected for their suitability in an introductory physiology unit and their ability to scaffold advanced physiology learning (flow down gradients, cell membrane, cell-to-cell communication, structure function, homeostasis and evolution). Innovative curricular and pedagogical approaches were employed to (1) create a Core Concepts structure, (2) sell the Core Concepts approach to students, (3) foreground Core Concepts in learning materials, (4) actively engage students with Core Concepts, (5) revise and (6) assess Core Concepts understanding. Innovations included bookending the semester with focused Core Concepts material, introduction of Core Concepts learning objectives, signposting Core Concepts in teaching materials using icons, introducing “Interactive Bites” around Core Concepts, and the development of a poster assessment to gauge students’ development of a higher-level, integrative understanding of a Core Concept. All methods were scalable and suitable for online delivery. Median student marks and overall satisfaction with the unit were unaffected by introduction of a Core Concepts approach. Notably, though, there was a 14% increase in student agreement with the statement “I received feedback that helped me to learn”. The challenge of Core Concepts approach was articulated by students, but these novice learners also recognized Core Concepts as a mechanism to focus their understanding of physiology and promote critical thinking. For teaching staff, a core concepts approach was a re-invigorating opportunity to apply their expertise to the teaching of introductory physiology. We propose that a strong Core Concepts emphasis, while challenging, is highly rewarding for staff and provides students with a “disciplinary passport”, that better prepares them to progress in diverse courses and professions.

Michael Ja, Cliff Wa, McFarland Ja, Modell Ha, Wright Aa, SpringerLink. 2017. *The Core Concepts of Physiology: A New Paradigm for Teaching Physiology*. New York, NY: Springer New York.