

Progressive development of scientific literacy through assessment

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A key outcome of science education is the development of graduates' scientific literacy, defined as “*an individual's scientific knowledge, and use of that knowledge to identify questions, to acquire new knowledge, to explain scientific phenomena, and to draw evidence-based conclusions...*” (OECD 2010, pg 137). To progressively develop these skills in our students we have designed a series of increasingly complex assessment tasks, embedded within inquiry-based classes that are vertically-integrated across the Biomedical Science major. As students progress through these classes, they draw on their developing content knowledge to propose and undertake experiments, and make conclusions based on evidence from their findings and scientific literature. An analysis of the guidelines and criteria for each assessment task showed both commonalities and differences across courses. While commonalities were used to ensure assessment expectations were explained consistently, the introduction of new elements within criteria and modifications of criteria standard descriptors reflected both the increase in students' disciplinary knowledge and the expectation that students develop increasingly complex cognitive skills as they progress. In addition, there was a reduction in the length and detail of these supporting documents, reflecting a deliberate reduction in scaffolding in each successive course to encourage more independent learning. A longitudinal analysis of assessment submissions from students across four semesters demonstrated the developmental trajectory of their skills. Specifically, students showed increases in their ability to formulate testable hypotheses with measurable outcomes, their appreciation of cutting-edge methodologies and deeper understanding of the contestable nature of increasingly complex areas of scientific knowledge.